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ABSTRACT

This comprehensive monograph provides a thorough and critical analysis of previous research on youth smoking, the various influential factors, and anti-smoking education, outlining study and evaluation techniques and instruments, and attitude change methods available in this field. Using this informational base and a broad-scale survey of secondary school students, the author attempted to mount a scientifically based anti-smoking education program. Numerous studies were conducted, and test instruments, educational materials, classroom teaching-learning experiments and prospective surveys were developed. The detailed appendix includes information regarding survey procedures, instruments, their tables and figures, mass communication messages, a description of the teaching unit and materials and the major techniques of investigation. Results of their study regarding smoker and non-smoker characteristics, their efforts to modify behavior, and smoking rates and trends among Illinois youth are discussed in detail, as are the limitations of their study and implications for anti-smoking education programs. The authors stress the absolute necessity of (a) the schools' involvement and (b) the earliness of such preventive programs in the students' educational sequences. (KS)

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Youth Smoking Behavior Characteristics and Their Educational Implications

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A REPORT OF THE UNIVERSITY OF ILLINOIS ANTI-SMOKING EDUCATION STUDY

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Study Team

William H. Creswell, Jr.
Warren J. Huffman
Donald B. Stone

June 30, 1970

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YOUTH SMOKING BEHAVIOR CHARACTERISTICS AND THEIR EDUCATIONAL IMPLICATIONS

A report of the University of Illinois
Anti-Smoking Education Study

Study Team Members

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June 30, 1970

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YOUTH SMOKING BEHAVIOR CHARACTERISTICS AND THEIR EDUCATIONAL IMPLICATIONS

edited by

Jean M. Creswell

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CHAPTER I

AN OVERVIEW OF THE UNIVERSITY OF ILLINOIS ANTI-SMOKING EDUCATION STUDY

William H. Creswell, Jr.

In its role as protector of the nation's well-being, the United States Public Health Service has devoted an increasing amount of attention to the study of the effects of cigarette smoking upon health. In 1959, the Public Health Service Report assessed the evidence linking cigarette smoking to lung cancer.

Following this, in 1964, the Surgeon General's Report, Smoking and Health, was issued with its exhaustive review of the research literature. A landmark conclusion of this year-long study, as presented by the Surgeon General's Advisory Committee, was that "Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action." In accepting the Advisory Committee's report, Dr. Luther L. Terry,[22] then Surgeon General, pledged that not only would the report be thoroughly reviewed, but that action to resolve the problem would be taken by the Public Health Service.

This led to legislation in the form of Public Law 89-92, the Federal Cigarette Labeling and Advertising Act of 1965. Among other requirements, this law provided that the Secretary of Health, Education, and Welfare must submit an annual report to the Congress concerning the current information on the health consequences of smoking, and that he must make such legislative recommendations as he might deem appropriate.

In order for the Public Health Services to carry out its expanded responsibilities, the National Clearinghouse for Smoking and Health was created. The Clearinghouse has been instrumental in bringing about significant research and program development effort designed to prevent and to modify harmful smoking behavior patterns.

The United States Public Health Service issued its report, The Health Consequences of Smoking, in 1967, followed by its Supplemental issues in 1968 and 1969. These publications reviewed and summarized that research on smoking and health which had been conducted during the period from 1964 to date.

In presenting his report and recommendations to the United States Congress in July of 1968, Wilbur J. Cohen, then Secretary to the Department of Health, Education and Welfare, stated that this research

> confirms or strengthenes the conclusions of the two previous studies published by the Department - the 1964 report of the Surgeon General's Advisory Committee of Smoking and Health and the 1967 report of The Health Consequences of Smoking. These conclusions are that smoking is a serious health hazard in this country, one which is bringing about much unnecessary disease and death within our population. In the words of the 1964 Report, adequate remedial action is required. In my opinion, the remedial action taken until now has not been adequate.

Studies on Youth Smoking

A survey of the literature on youth smoking reveals that the present interest in the topic had its beginnings in the mid to late 1950's. In the subsequent period of some 15 years, more than 20 studies have been conducted and reported. Studies have been carried out in England, Norway, Canada, and in the United States.

Lack of Common Definitions

Unfortunately, certain factors make it difficult to generalize from the findings of this research. Differences in the samples studied, in the research procedures, and in the

method of reporting the study findings all place restrictions on the interpretations that are made. The principal difficulty in making meaningful comparisons of these study results is the lack of a standard definition for the smoker. To illustrate this problem some of the definitions employed in youth smoking research thus far are as follows:

> Nilsen[14] in his study of children in Norway defined a smoker as one who "smoked daily;"
>
> Sallack's[19] study of junior and senior high school students in Erie County, New York, identifies a smoker as a person who had smoked at least five packages of cigarettes;
>
> Haynes, Krstutovic and Bell[3] considered one who had smoked at least one cigarette a day to be a smoker; while
>
> Salber[18] in her study of Newton, Massachusetts high school students termed a smoker as one who had smoked at least ten cigarettes or who considered himself to be a smoker at the time of the survey.

Because of these difficulties, the National Clearinghouse for Smoking and Health has encouraged the use of a common definition of a smoker in those investigations conducted here in the United States. Consequently, the several different sub-studies conducted under the auspices of the University of Illinois Anti-Smoking Study have all defined the smoker as a person who classified himself in either one of the following ways:

> "I usually smoke cigarettes just about every day;" or
>
> "I now smoke cigarettes once in awhile but not every day."

Rate of Smoking

Since several recent studies have employed this definition it has become possible to make some comparisons. Accordingly, the following table gives the comparative smoking rates for four studies conducted over the ten year period from 1958 to 1967.

A COMPARISON OF NINTH GRADE SMOKING RATES
FROM STUDIES USING A COMMON DEFINITION FOR SMOKERS*

		Total Percentages	
		Boys	Girls
Horn	1958	18.3	6.3
Ward	1963	18.9	7.6
Jones et. al.	1965	13.5	6.3
Creswell et. al.	1967	22.6	10.8

(Regular and Occasional Smokers Combined)

*Adapted from Table I, Newman's study "The Social Dynamics of Cigarette Smoking in A Junior High School"

These data would seem to indicate that a trend toward increased smoking among youth has occurred over the ten year period from 1958 to 1967. With the exception of the study of Arizona youth by Jones et. al.,[7] each succeeding study reported a higher rate of smoking.

Factors in Youth Smoking Behavior

Youth smoking studies have all shared a common thesis which holds that a program of intervention will be most efficacious in preventing establishment of the cigarette habit. These investigations have sought information about smoking behavior such as the conditions of beginning and continuation, the motivations, and the factors that are associated with both smoking and non-smoking behaviors. The results of such investigations presumably will eventually lead to the development of programs that will help youth resist the pressure to smoke.

The age of first smoking, the period of experimentation, and regular smoking behavior have been major points of interest. According to Merki's[12] review of some 19 studies, most investigators had placed the age of habit formation around 13 years. Again, the age of the inception of regular smoking may be subject to some variation because of the differences in definitions. McKennell[11] and his associates, in the government survey of adolescent and adult smoking in England and Wales, made a thorough review of the developing pattern of smoking. They have reported that the average period of experimentation is approximately three years in duration for males and about two years for females. Based on the replies of several different age group samples, the age at which regular smoking became established for English youth was 11 to 12 years for boys, and 13 to 14 years for girls.

A. Parental Effect

Almost without exception, the broad scale survey studies have shown a significant positive correlation between the smoking behavior of youth and their parents, with the highest correlation existing for those youth who come from homes where both parents smoke. In cases with only one smoking parent, an observable relationship still exists, higher than that for young people from homes where neither parent smokes, but lower than the correlation existing when both parents are smokers. Some study results suggest that the father's influence on smoking behavior may be more important than the mother's.

Parents of non-smoking youths are much more likely to oppose smoking behavior than are parents of young smokers. Consistent with this observation is the fact that those young people who have quit smoking are more likely to have parents who are opposed to smoking.

B. Participation in Activities

Most investigators have reported that the smoker tends to be a non-participant insofar as school athletics, extracurricular, or community activities are concerned. While the Illinois Study results generally support these conclusions, there were some contradictory findings. For example, there appears to be little or no relationship between smoking and athletic participation among junior high students (grades 7 and 8), or the rural youth who were studied. As a possible explanation of this variation in behavior for these two groups, it has been suggested that the junior high school athlete is more mature physically than his classmates. This difference in maturity may have offset the usual differences in smoking rates of participants and non-participants in school athletics. With regard to the rural youth in this study, their comparatively lower over-all smoking rate may have accounted for the lack of relationship.

C. Peer Group Influence

In earlier studies, peer group influence on youth smoking was not often considered. However, this has received increasing attention in recent research. In his 1968 study of the social dynamics of youth smoking, Newman[13] characterized the peer group influence as the most important pressure affecting smoking behavior. The fact that results have been highly consistent especially in the initiating of smoking behavior give credence to the importance of this factor.

Those who have investigated the peer group influence describe youth smoking as very much a social phenomenon. McKennell[11] writing in the government report of smoking in England and Wales, states "...smoking alone is very rare in the early stages." He also believes that peer group pressure is most prominent in the beginning stages of smoking.

In a somewhat related fashion, most reports offer support for conclusions that older siblings of the same sex constitute a major determining factor in the smoking behavior patterns of younger brothers and sisters. The importance of the exemplar role of the older sibling has led one investigator to suggest that efforts to modify youth smoking

behavior should concentrate on first changing the older sibling's behavior.

D. School Achievement

The relationship of student smoking or non-smoking to school performance has been studied from a number of different perspectives. Students who have earned high grade point averages, achieved honor status, enrolled in college preparatory courses, and those who expect to enroll in college tend to be non-smokers. Stated conversely, a consistent pattern has emerged in these studies which associates smoking with low school achievement.

Summary

However, it should be stressed again that statistical correlations do not prove a causal connection to smoking. Instead, they may be mere statistical artifacts on the periphery of a more fundamental relationship. In order to examine smoking behavior in a different context, Newman[13] used the participant observation method to conduct an in-depth study of several of the factors believed to be associated with smoking. As a consequence, he concluded that the parental influence was not a significant factor in the smoking of the ninth grade students in his study. According to his view, youth smoking is an act that satisfies the more fundamental needs of youth such as affording a means of asserting independence of adult authority, and as a means of compensating for a lack of success in school.

Or, is it possible that the smoker represents a unique personality or constitutional characteristic, not yet identified, which sets him apart from the more casual experimenter smoker.

Anti-Smoking Education

In the past, anti-smoking education studies have been designed to deal with three problems: (1) helping adults stop smoking, (2) helping youths avoid becoming smokers, and (3) helping smokers who can't stop to do so in less hazardous ways. As has been discussed, these several studies seem to agree, in general, on the factors that are associated with smoking and non-smoking behavior. But how have these results been utilized in improving health education and promoting a lower rate of youth smoking? Has this research added to the theory of health behavior change?

The major assumption and prime motive for the youth smoking studies seems to be that such research would provide the practical solutions needed to develop and implement an effective educational program. What has been the effect of these studies? What new guidelines should now be formulated to help schools implement broad scale preventive education?

Most of the studies have concentrated on the nature and extent of youth smoking. Comparatively little effort has been devoted to anti-smoking education per se. There appears to have been a general reluctance on the part of investigators to undertake the difficulties of conducting experimental studies in youth smoking education. In those instances where youth smoking education programs have been developed and tested, the results have been seriously questioned because of certain weaknesses in study design and the theory of behavior change. Aside from the usual difficulties of conducting experimental studies with human subjects, a host of problems must be faced. Preparing curriculum, training teachers, developing evaluation procedures and techniques, and conducting experiments in the school setting require the talents of many specialists.

As a generalization, school studies have taken one of two forms. The first type is, in reality, an experiment in mass communications media rather than a curriculum in an educational sense. Although extremely limited in substance, these studies have been conducted under carefully controlled experimental procedures. Unhappily, the results of such narrowly based programs offer little in the way of benefit to schools.

The second type is a general, extensive, anti-smoking education program. Such programs have included comprehensive curriculum features, involving many different teachers as well as instruction at several different levels. In addition, such programs have frequently involved parents and community agencies. The difficulty of conducting a scientific evaluation of such programs has represented a serious limitation in the effort to generalize from this type of educational experience.

In a review of six school anti-smoking studies, Leventhal[9] found that only two of these experiments produced a significant reduction in smoking behavior. He was sharply critical in his evaluation of these studies.

> ...only the sanguine would conclude that these efforts have greatly increased our theoretical understanding or practical control of smoking. ...given the amount of effort invested in the studies, why has the feedback been so short of the mark? It is suggested that little knowledge was gained from these efforts because their basic orientation was inappropriate.

Leventhal's position is that no body of theory and fact exists relative to changing behavior on which to base an anti-smoking education program. He contended that more small scale experiments should be conducted in order to develop the needed conceptual and theoretical basis required for the larger studies.

This lack of a consistent pattern of knowledge regarding the characteristics of youth smoking weighed heavily in the decisions shaping the direction and emphasis of the University of Illinois Anti-Smoking Education Study. As a consequence, it was decided that before launching a new study there should first be a critical reappraisal of the findings and research methodology of previous studies. The research problems already cited such as the need for a commonly accepted method of classifying the smoker and the need for a well formulated theory of behavior change were factors considered in the Illinois study.

Because of these circumstances, the Illinois project was begun with a modified replication of Horn's 1958 study of Portland youth. This provided basic information about the nature and extent of smoking among the youth included in the Illinois Study sample and, also provided a basis for comparing youth smoking as revealed by two studies using similar methods. Presumably these results would offer new insight into trends on youth smoking over the 10 year period separating the two studies. In addition, starting with a comprehensive survey provided the necessary parameters for assessing the effects of an educational program as well as the measures needed for a prospective or longitudinal study.

University of Illinois Anti-Smoking Education Study

The University of Illinois Anti-Smoking Education Study is one of a number of research projects that have been supported under a contract with the National Clearinghouse for Smoking and Health, Public Health Service, Department of Health, Education, and Welfare. The original contract for the study was from 1966 to 1969; however, the time period was subsequently extended until 1970.

The initial survey included a study of selected socio-demographic and smoker characteristics of 23,724 public and parochial secondary school youth (grades 7-12) in Winnebago County, Illinois. The baseline information served as a reference point for evaluating a series of continuing and related studies and the data needed for effecting a comparative analysis with Horn's study conducted on the youth of Portland, Oregon in 1958. During the three year period of the project, thirteen separate but related studies have been completed.

Using baseline data, a selected youth population was followed through successive school years in an effort to ascertain youth smoking trends. One of the most important features of the prospective study was the utilization of the multiple regression analysis which was designed to test the predictability of selected demographic factors and attitude-belief characteristics of youth on their future smoking behavior.

Results from the first of this series of surveys on the Winnebago County population (1966) tended to confirm a number of the findings from previous studies. The inverse relationship found between the student's smoking rate, his educational aspirations, and his parents' level of education was consistent with the results of earlier studies. The inverse relationship between youth smoking and participation in school and community activities including school athletics was also shown. While findings for the over-all rate of youth smoking in the Illinois study are similar to those of earlier studies, certain differences were revealed. It appears that the early adolescent girl is smoking at a considerably higher rate than was her counterpart ten years ago. This higher rate was also observed for ninth grade boys, but the differences were not as pronounced as for the girls.

Related Studies

1. Mass Communication Messages Experiment

This study differed from the earlier Horn Study[5] in that it was extended to include students at lower grade levels (7 and 8) and rural as well as urban youth.

Experimental and control groups were established to test the effects of five different message themes. The results of the experiment were evaluated by measuring the changes in students' attitudes and beliefs about smoking and smoking behavior that occurred during the experimental period.

Findings from Horn's study indicated that the remote theme (long term disease effects of smoking) was the most effective in reducing the rate at which youth were recruited to smoking. The Illinois experiment appears to indicate that the contemporary message theme (immediate effects of smoking) was most effective in reducing the rate at which youth take up smoking.

2. Student-Centered Approach Experiment

This experiment, conducted by Merki,[12] was designed to test the proposition that the students' peer group is one of the most important forces affecting smoking behavior. The study utilized the two message themes found to be most effective in the Portland mass communication experiment, and tested them against a student-centered approach involving student symposia and class discussions. Study results confirmed the hypothesis that the personalized student-centered approach was more effective than the mass communication approach in changing student attitudes and beliefs toward a non-smoking position.

3. Instrument Evaluation Studies

Two studies[1, 20] were conducted to test the validity of the University of Illinois Smoking Attitude-Belief Scale. Both studies used smoker and non-smoker samples of college men and women in an attempt to determine the usefulness of the scale as an instrument to discriminate between groups differing in their smoking characteristics. The results of these two studies confirmed the effectiveness of the scale as an instrument to assess the attitudes and beliefs of smokers and non-smokers. The degree of difference score as well as the direction of scale score differences supported the continued use of this instrument.

4. Development of Smoking Knowledge Achievement Test

The original forty-four item knowledge achievement test developed by Ladner[7] has undergone revisions. The revised form was designed for use in conjunction with the attitude-belief scale as one of the two principal instruments to measure the effects of an educational program. Following field trial testing, test item analysis, and revision, it was used on an experimental basis in the classroom smoking education experiment conducted by Irwin.[6]

5. Development of a Second Attitude-Belief Type Instrument

A study conducted by Swanson[21] sought to develop another type of instrument that would aid in distinguishing between those students holding attitudes and beliefs characteristic of smokers and those students holding attitudes and beliefs characteristic of non-smokers. The instrument was composed of a two-part scale which combined features of the semantic differential and summated rating scales. The purpose for including the two-part scale was an attempt to make a more accurate assessment of student attitudes and beliefs about smoking by incorporating the less direct approach of the semantic differential scale. The aim of the study was to secure a more valid reflection of students' attitudes and beliefs. It is believed that students may tend to give back what they perceived to be the "expected" or "correct" response.

Items on the scale were assigned weightings for purposes of scoring and for factor analysis. Four of the five factors selected from the analysis revealed significant differences between the scores of smokers and non-smokers.

6. Participant Observation Study of Youth Smoking

Newman[13] studied the social dynamics of youth smoking in an urban junior high school. The participant-observer method was employed in conducting an in-depth study of the smoking and non-smoking characteristics of a small random sample of eighty students. To effect the necessary rapport and relationship with students, the investigator assumed the role of a visiting foreign educator and school counselor. The study was conducted over the nine month period of the school year. Data collected through observations and a series of

student interviews were used to document the behavior patterns of these students. Additional techniques were employed to study social status, peer group membership, and personal expectations.

The findings of this research reinforced the importance of the peer group influence in both smoking and non-smoking behavior. Furthermore, the results of this study suggest that for an important segment of the youth population, smoking may be more accurately viewed as a form of compensatory behavior. The smoking student is frequently not as successful either socially or academically as his non-smoking counterpart. A more productive approach for the schools in lowering the rate of smoking might well be through programs aimed at stimulating the interest of these students and providing them with an experience of success in the school.

7. The Role of Materials in Changing Attitudes and Beliefs

An experiment conducted by Rupnow[17] was designed to test the effects of anti-smoking educational materials on seventh grade students' attitudes and beliefs about smoking. Important elements of this study involved the use of student-selected materials and the sequencing of these materials according to the steps in the health behavior change model as identified by Hochbaum[4] and Rosenstock.[16] The University of Illinois Smoking Attitude-Belief Scale was employed as the criterion measure. Experimental and control groups were pre- and posttested over a five week experimental period. Results showed that students exposed to the materials made significantly more favorable changes toward non-smoking attitudes and beliefs.

8. Classroom Teaching Experiment in Smoking Education

This study by Irwin[6] represented a culmination of much of the preceeding two years of investigation and research. Information which had been acquired about the characteristics of smokers and non-smokers, the influence of peer groups, teaching materials, and the role of the teacher was incorporated into the experiment. A 2 x 3 x 2 factorial experiment was designed to test the four main effects of (1) teacher preparation, (2) classroom approach or methods, (3) the sex of the student, and (4) the interaction of these factors on students' attitudes, beliefs, and knowledge about smoking.

Examination of the pre- to posttest change of scores revealed a rather striking shift in the students' attitudes and beliefs as compared to the changes that occurred in the knowledge test scores. The changes were in the desired direction of non-smoking. In general, the research hypotheses were rejected, with the exception of the predicted sex difference of more favorable effects for girls. Students in the regular-classroom-teacher-classes tended to show more favorable changes than did those students in the trained teacher classes.* With reference to classroom methods, the students taught by the individual study approach showed more favorable changes than did students in the teacher-led and peer-led classes. This may offer support for Newman's contention that the school's traditional practice of punishing students for smoking behavior precludes the effectiveness of a teacher-led approach to smoking education in the school.

9. Prospective Study of Non-Smokers

A prospective epidemiological study of 1,927 secondary school youth was conducted by O'Rourke.[15] The purpose of this study was to test the relationship of selected attitude-belief variables and certain demographic characteristics to future smoking behavior.

A population of non-smoking students was identified from the initial Illinois survey in 1966. These same students were followed or observed from 1966 to 1968 to assess their smoking behavior changes. At the conclusion of the two year period, October, 1968, the study population was resurveyed to determine the extent of smoking that had developed. For the purpose of predicting smoking behavior, a multiple regression statistical analysis was utilized.

The results of the step-wise multiple correlation analysis failed to identify specific attitude-belief factors or descriptive variables which were capable of predicting future smoking behavior. Similarly, the multiple correlation of all of the independent variables failed to account for a sufficiently large proportion of variance to justify their use as

*Teacher trained in smoking education

predictors of smoking behavior.

Probably one of the most important outcomes of this study was the development of a computer program for data analysis. This made it possible to process rapidly and accurately the statistical analysis of the rather complex treatment of data involved in a multiple correlation and regression analysis program. The experience gained in the design and methodology of this program should have important implications for the conduct of future regression analysis studies.

10. Prospective Study of Smokers

Paralleling O'Rourke's two year study of non-smokers was a companion research project conducted by Laoye,[8] in which the prospective survey method was also employed to study the behavior characteristics of 1,205 students who were classified at the beginning of the study period in 1966 as either regular or occasional cigarette smokers.

The objective of this research was to study the smoking behavior changes of youth in order to determine the attitude-belief, sociological, and demographic characteristics that are associated with particular smoking behavior changes. In order to facilitate the study of behavior characteristics associated with smoking, three distinct behavior groupings were established: (a) regular smokers who remained regular smokers, (b) regular smokers who quit smoking and (c) occasional smokers who became regular smokers.

The University of Illinois Survey Form was used as the instrument to assess the smoking behavior, and also those socio-demographic, and attitude-belief characteristics associated with a particular behavior.

Results of the study revealed significant differences among the different smoking behavior groupings in the pre- (1966) and posttest (1968) mean scores on the demographic and sociological sections of the survey instrument. No significant differences were found in the scores on the section pertaining to attitude-belief characteristics. Age (as reflected by grade level) affected the rate of regular cigarette smoking only when the extremes of the distribution were compared; that is, when the seventh grade was compared with the tenth in 1966, or the ninth grade compared with the twelfth in 1968. In 1966, a significant difference existed between the sexes with respect to the rate of regular smoking; however, the 1968 survey showed no such difference. This lack of difference in the rate of regular smoking between the sexes in 1968 was the result of two offsetting changes. Among the occasional smokers, a higher proportion of girls became regular smokers in 1968 than in 1966, and among the regular smokers, a higher proportion of boys quit smoking in 1968. The differences between the sexes in rate of quitting was not significant when all grades were combined. However, there was a statistically significant difference in quitting from grade seven to grade nine, with more boys quitting than girls.

11. A Study of Seventh Grade Students Smoking Behavior

A related study by Lindsay[10] was conducted for the two-fold purpose of (1) identifying attitude-belief characteristics of seventh grade students who had made a change of smoking behavior during the period of 1966-1968 and; (2) collecting data for a further validation study of the University of Illinois Smoking Attitude-Belief Scale.

Preliminary results from this study indicate that there are certain attitude and belief characteristics that correlate highly with current smoking behavior status. This study has also shown that the attitude-belief scale is sensitive to change of attitudes and beliefs by reflecting significant changes in total scores obtained by the different smoking behavior groupings.

Conclusion

The growing concern over the health threat posed by cigarette smoking has been examined together with the related efforts of the government to protect the health of the public. In order to provide a context for the Illinois study, the research on youth smoking has been emphasized in this review. Ostensibly the purpose of these studies has been to help youth avoid initiating the smoking habit. However, it is apparent from the results that these studies have by and large, been confined to the extent and nature of smoking and to a description of the characteristics of smoking and non-smoking youth. Accordingly, it is contended that little has been done in the way of mounting a scientifically based anti-smoking education program.

Given this situation, the University of Illinois study team members have made a continuous effort to maintain anti-smoking education as a focal point in this study. At the outset a broad scale survey was conducted in order to establish a baseline reference point for measuring future smoking behavior changes. In addition to the survey, a modified replication of Horn's Portland study was followed by twelve (12) related studies. Included among these investigations were the development of test instruments, educational materials, classroom teaching-learning experiments and prospective surveys designed to test the predictability of selected factors in relation to future smoking behavior.

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CHAPTER II

A REPLICATION OF THE HORN STUDY ON YOUTH SMOKING IN 1967

Donald B. Stone and Warren J. Huffman

The Horn study[1] conducted in Portland, Oregon, in 1958 served as a stimulus for a series of studies involving the smoking practices of youth. Subsequent research studies involving smoking practices among teenagers have, to some extent, been concerned with the analysis of characteristics of the smoker and with the effects upon smokers of various types of health messages as presented by a mass media approach. While this information may be useful for developing public health measures, the educator is more concerned with research on the teaching-learning process in the classroom setting. If, through preventive education, school health education is to help youth resist the pressure to smoke then such factors as teacher influence, teaching methods, curriculum materials, peer group, and parental influence need more intensive study. Prior to the initiation of such research, however, the study team at the University of Illinois agreed that a useful first step would be to conduct a modified replication of Horn's Portland study. The purpose of this procedure was (1) to determine whether Horn's findings on youth smoking in 1958 still held true for 1966, nearly ten years later; and (2) to determine whether his findings were representative of a large population of midwestern youth. Since the plans called for a series of follow-up studies with the school population selected, the status study would provide a necessary base of information for subsequent investigations.

Modified Replication Phase of the Study

Objectives

The major objective for the first phase of the University of Illinois study and the principal activity for the school year 1966-1967 was the conducting of a modified replication of the Horn Portland, Oregon Study. Several modifications were incorporated into the Illinois study. Junior high and rural youth were included as well as urban senior high school youth. In addition, the effectiveness of the mass communication educational approach was compared to a personalized educational approach which used students in a symposium discussion study. The specific objectives were (1) to determine the rate and distribution of smoking among junior and senior high school students, (2) to determine the rate and distribution of smoking among rural youth, (3) to re-assess those factors Horn found to be associated with youth smoking, (4) to investigate other factors which might be associated with youth smoking, (5) to re-evaluate Horn's five different mass communication message themes in terms of their effectiveness in preventing the initiation of youth smoking, and (6) to contrast the effects of a student-centered approach with Horn's "remote" and "contemporary" mass communication themes.

Selection of the Study Population

After analyzing the demographic characteristics of the student population in Portland, Oregon, the Rockford-Winnebago County area located in northern Illinois, was selected as the site for the study. All junior and senior high schools, including the public, the Roman Catholic, and the Lutheran parochial schools of Winnebago County and the schools of the Rockford Diocese were included. This comprised a total of 62 schools, 1,052 classes and teachers, and 23,724 junior and senior high school students. From this total group, 392 eleventh grade students and 730 eighth grade students, from five high schools and twelve junior high schools, were selected for the student-centered study.

Survey Procedures

The forty-five item attitude scale and the two questionnaires used by Horn in the Portland study served as the primary basis for the development of the instruments employed by the University of Illinois study. Various modifications in both the attitude scale and questionnaire were incorporated into the new instrument by the study team. In order to simplify the procedures for administering the survey, the questionnaire and the attitude scale were combined into a single instrument composed of two parts. Before making a final revision, a preliminary version of the combined survey form was administered to a representative group of high school students as a trial test in order to determine the instrument's usability.

As soon as formal approval was given to conduct the study in Winnebago County, the necessary administrative steps were taken to prepare for the first major survey.

Information on the smoking practices and attitudes of 23,724 junior and senior high school students (11,867 boys and 11,857 girls) representing all of the public and parochial schools in the Rockford-Winnebago area in northern Illinois was obtained during the month of October, 1966. This survey provided the baseline information and marked the beginning of the mass communication phase of the experiment. Horn's five different mass communication themes were again tested in this population. Then some seven months later, in May, 1967, the survey instrument was re-administered to assess changes in attitudes, beliefs, and smoking behavior. Of the original 23,724 student population included in the study, a total of 20,026 cases were matched on the pre- to posttest surveys, including 9,849 boys and 10,177 girls. This made it possible to achieve a greater degree of precision of measurement in evaluating the effects of the different messages. In addition, use of the same groups for the subsequent measures helped to clarify smoking trends among youth.

As soon as the posttest survey data had been transferred to IBM cards, the data decks from the pretest and the posttest surveys were matched and all incomplete data cards were separated from this study. These matched decks were then used as the data source for evaluating pre- and posttest changes occuring over the experimental period.

Data from question number 21 on the Survey Form represented a key item of information for purposes of this research. (See Figure 1).

FIGURE 1

CLASSIFICATION OF SMOKING BEHAVIOR BY RESPONSE TO QUESTION 21 ON THE UNIVERSITY OF ILLINOIS SURVEY FORM

Question 21. Select the One Statement that Best Describes You at the Present Time.

Response		Smoking Behavior
a. I usually smoke cigarettes just about every day	SMOKERS	Current Regular Smoker
b. I now smoke cigarettes once in a while, but not everyday	SMOKERS	Current Occasional Smoker
c. I used to smoke cigarettes just about everyday, but I don't smoke them now	NON-SMOKERS	Ex-Regular Smoker
d. I have smoked cigarettes a few times, but I don't smoke now	NON-SMOKERS	Ex-Occasional Smoker
e. I have never smoked cigarettes	NON-SMOKERS	Never Smoked

On the basis of the response to this item, all students' smoking behavior was categorized as (1) current regular, (2) current occasional, (3) ex-regular, (4) ex-occasional, and

(5) never smoked. The data from the various types of smoking and non-smoking groups were analyzed to determine the relationship between these groups and a number of factors identified in Horn's original study. Those factors studied for their relationship to the status of smoking and non-smoking included the following items: school system, urban and rural, grade level, age, sex, parental education and smoking behavior, athletic participation, school and community activities, educational aspiration, type of cigarette selected, smoking environment, and period of smoking.

TABLE 1

PERCENTAGE DISTRIBUTION OF CIGARETTE SMOKING HABITS BY GRADE LEVELS AND SEX

BOYS BY GRADE

	7th		8th		9th		10th		11th		12th		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Regular	125	05.5	157	07.0	235	10.9	264	13.5	327	18.7	335	22.1	1443	12.2
Occasional	221	09.8	254	11.4	252	11.7	224	11.4	202	11.6	172	11.4	1325	11.2
TOTAL SMOKERS	346	15.3	411	18.4	487	22.6	488	24.9	529	30.3	507	33.5	2768	23.4
Ex-Regular	93	04.1	115	05.2	95	04.4	113	05.8	63	03.6	43	02.8	522	04.4
Ex-Occasional	633	28.0	753	33.8	760	35.2	690	35.2	631	36.1	514	34.0	3981	33.5
Never Smoked	1189	52.6	948	42.6	816	37.8	668	34.1	525	30.0	450	29.7	4596	38.7
TOTAL NONSMOKERS	1915	84.7	1816	81.6	1671	77.4	1471	75.1	1219	69.7	1007	66.5	9099	76.6
TOTALS	2261	(100)	2227	(100)	2158	(100)	1959	(100)	1748	(100)	1514	(100)	11867	(100)

GIRLS BY GRADE

Regular	41	01.8	60	02.8	116	05.3	154	07.4	161	09.4	211	13.7	743	06.3
Occasional	129	05.8	185	08.7	184	08.4	239	11.6	195	11.4	202	13.1	1134	09.6
TOTAL SMOKERS	170	07.6	245	11.5	300	13.7	393	19.0	356	20.8	413	26.8	1877	15.9
Ex-Regular	34	01.5	51	02.4	44	02.0	39	01.9	31	01.8	34	02.2	233	02.0
Ex-Occasional	415	18.7	552	25.9	628	28.7	640	31.0	527	30.9	433	28.0	3195	26.9
Never Smoked	1606	72.2	1281	60.2	1214	55.6	994	48.1	793	46.5	664	43.0	6552	55.2
TOTAL NONSMOKERS	2055	92.4	1884	88.5	1886	86.3	1673	81.0	1351	79.2	1131	73.2	9980	84.1
TOTALS	2225	(100)	2129	(100)	2186	(100)	2066	(100)	1707	(100)	1544	(100)	11857	(100)

TOTAL BY GRADE

Regular	166	03.7	217	05.0	351	08.1	418	10.4	488	14.1	546	17.9	2186	09.2
Occasional	350	07.8	439	10.1	436	10.0	463	11.5	397	11.5	374	12.2	2459	10.4
TOTAL SMOKERS	516	11.5	656	15.1	787	18.1	881	21.9	885	25.6	920	30.1	4645	19.6
Ex-Regular	127	02.8	166	03.8	139	03.2	152	03.8	94	02.7	77	02.5	755	03.2
Ex-Occasional	1048	23.4	1305	29.9	1388	32.0	1330	33.0	1158	33.5	947	31.0	7176	30.2
Never Smoked	2795	62.3	2229	51.2	2030	46.7	1662	41.3	1318	38.2	1114	36.4	11148	47.0
TOTAL NONSMOKERS	3970	88.5	3700	84.9	3557	81.9	3144	78.1	2570	74.4	2138	69.9	19079	80.4
TOTALS	4486	(100)	4356	(100)	4344	(100)	4025	(100)	3455	(100)	3058	(100)	23724	(100)

Summary of Findings from the Survey

Distribution of Smoking Behavior

Table 1 summarizes the resultant data from question 21 on the Survey Form. The percentage distribution of all smokers (regular and occasional) ranged from 11.5 percent of the seventh graders to 30.1 percent of the twelfth graders. Each successive school grade included a higher percentage of smokers than did the preceding grade, irrespective of sex.

The percentage of regular male smokers (defined as "smoking cigarettes just about every day") ranged from 05.5 percent of the seventh graders to 22.1 percent of the twelfth graders. The corresponding percentages for the female smoker was 01.8 percent and 13.7 percent.

The percentage of occasional male smokers (one who smoked "once in a while but not every day") ranged from 09.8 percent of the seventh graders to 11.4 percent of the seniors. For the girls, the corresponding percentages were 05.8 and 13.1 percent.

While the proportion of regular cigarette smokers increased for both sexes through the grades studied, a different pattern was displayed for the occasional smokers. After the seventh grade, the relative proportion of smokers among boys leveled off and remained fairly constant throughout the grades. However, the proportion of occasional smokers among the girls tended to increase throughout the grades. This finding suggested that the boys tend to become more established as regular smokers by the eighth grade whereas the girls continue to smoke on an experimental basis through the twelfth grade.

The proportion of subjects classified as "never smoked" declined steadily for both sexes during the six school years; however, a general leveling off occurred by the eleventh grade. The sharpest decline among the proportion of students who "never smoked" occurred

between the seventh and eighth grades. While the proportion classified as "ex-occasional smokers" constituted approximately one-third of the total population, variations by class grade showed no systematic trend in this category except between the seventh and eighth grade where a substantial increase occurred. These findings suggest that the eighth grade is a critical point in determining whether the student will become a regular smoker or an ex-smoker. It also suggests that this might be the crucial time to emphasize an anti-smoking education program.

Patterns of Smoking

Table 1a shows that approximately 60 percent of the current male smokers and 40 percent of the female smokers consumed one or more packs of cigarettes a week. The percentage of male smokers who smoked three and more packs of cigarettes a week increased from 14 percent in the seventh grade to 44.5 percent in the twelfth grade. For the girls, the corresponding percentages were 02.8 percent and 22.7 percent.

TABLE 1a

PERCENTAGE DISTRIBUTION OF CURRENT SMOKERS BY AMOUNT SMOKED, GRADE LEVEL AND SEX

	BOYS BY GRADE													
	7TH		8TH		9TH		10TH		11TH		12TH		TOTAL	
AMOUNT SMOKED	NO.	PERCENTAGE SMOKERS	NO.	PERCENTAGE SMOKERS	NO.	PERCENTAGE SMOKERS	NO.	PERCENTAGE SMOKERS	NO.	PERCENTAGE SMOKERS	NO.	PERCENTAGE SMOKERS	NO.	PERCENTAGE SMOKERS
Less than 1 Pack (20) a Week	177	58.8	220	58.3	213	45.9	197	41.9	177	34.2	153	30.5	1137	43.2
About 1 Pack (20) a Week	53	17.6	64	17.0	77	16.6	76	16.2	59	11.4	62	12.4	391	14.9
About 2 Packs (40) a Week	29	09.6	35	09.3	66	14.2	60	12.8	78	15.0	63	12.6	331	12.6
About 3 Packs (60) a Week	20	06.7	23	06.1	47	10.1	43	09.1	74	14.3	65	13.0	272	10.3
More than 3 Packs (60) a Week	22	07.3	35	09.3	61	13.2	94	20.0	130	25.1	158	31.5	500	19.0
TOTAL	301	(100)	377	(100)	464	(100)	470	(100)	518	(100)	501	(100)	2631	(100)
	GIRLS BY GRADE													
Less than 1 Pack (20) a Week	114	79.7	149	68.0	174	59.8	232	61.0	191	54.3	185	45.1	1045	58.2
About 1 Pack (20) a Week	15	10.5	35	16.0	55	18.9	71	18.7	63	17.9	68	16.6	307	17.1
About 2 Packs (40) a Week	10	07.0	17	07.8	24	08.2	27	07.1	44	12.5	64	15.6	186	10.4
About 3 Packs (60) a Week	1	00.7	12	05.5	20	06.9	24	06.3	23	06.5	35	08.5	115	06.4
More than 3 Packs (60) a Week	3	02.1	6	02.7	18	06.2	26	06.9	31	08.8	58	14.2	142	07.9
TOTAL	143	(100)	219	(100)	291	(100)	380	(100)	352	(100)	410	(100)	1795	(100)

Among the current smokers (both regular and occasional) approximately half the boys and almost two-thirds of the girls smoked regular filter cigarettes. While a higher proportion of students smoked filter cigarettes, this may be due as much to availability as to student preference. For those students who smoked less than one pack per week a relatively higher percentage of them indicated they smoked "any kind available". (See Table 2).

The School System

Table 3 shows the proportion of the students in the study population who came from urban (public and parochial) and rural schools. The parochial students represented in the study attended the Roman Catholic and Lutheran schools in Rockford, Illinois.

Analysis of the percent of smokers (boys and girls combined) is presented in Table 4. Here the data reveals that urban students had a higher smoking rate than did their rural school counterparts. Additional analysis of the data by grade level indicated that among

the boys, the percentages of smokers in the rural schools was appreciably lower than that found in both the parochial and public urban school systems until the twelfth grade. At that point, the smoking rate in rural schools approximated the percentages found in the urban school systems. However, no similar trend was observed for the girls.

TABLE 2

PERCENTAGE DISTRIBUTION OF CURRENT SMOKERS BY AMOUNT SMOKED ACCORDING TO TYPE OF CIGARETTE SMOKED (ALL STUDENTS)

BOYS BY AMOUNT OF CIGARETTES SMOKED

TYPE OF CIGARETTE USUALLY SMOKED	LESS THAN 1 PACK (20) A WEEK	ABOUT 1 PACK (20) A WEEK	ABOUT 2 PACKS (40) A WEEK	ABOUT 3 PACKS (60) A WEEK	MORE THAN 3 PACKS (60) A WEEK	ALL SMOKERS
Regular Non-Filter	06.2	11.0	10.4	11.8	17.0	10.1
Regular Filter	56.7	47.6	45.1	41.7	34.0	48.0
King Size Plain	01.8	03.8	05.2	02.2	07.0	03.6
King Size Filter	17.2	30.3	33.9	37.6	34.8	26.7
Any Kind Available	18.0	07.2	05.5	06.6	07.2	11.6
Per Cent	99.9	99.9	100.1	99.9	100.0	100.0
Number of Smokers	1135	390	328	271	500	2624

GIRLS BY AMOUNT OF CIGARETTES SMOKED

Regular Non-Filter	07.6	04.6	03.2	03.5	04.9	06.1
Regular Filter	63.0	65.7	61.8	66.1	52.1	62.6
King Size Plain	00.6	01.3	01.6	00.0	00.0	00.7
King Size Filter	10.0	18.3	25.8	27.0	36.7	16.3
Any Kind Available	18.8	10.1	07.5	03.5	06.3	14.2
Per Cent	100.0	100.0	99.9	100.1	100.0	99.9
Number of Smokers	1044	306	186	115	142	1793

TABLE 3

PERCENT OF THE STUDENT POPULATION ATTENDING DIFFERENT SCHOOL SYSTEMS

Urban Public	78.8
Urban Parochial	12.5
Rural	08.7

TABLE 4

PERCENT OF SMOKERS BY TYPE OF SCHOOL SYSTEM

	Urban Public	Urban Parochial	Rural
Boys	23.5	22.6	17.7
Girls	15.9	15.0	12.2

D-27

The Effect of Parental Educational Level and Smoking Behavior

The smoking behavior of the junior and senior high school students was found to be directly related to the smoking behavior of the parents. The rate of smoking was highest among students of families in which both parents smoked. The percentage of cigarette smokers among students was lower when one parent was an "ex-smoker" than when both parents were "current smokers." If one or both parents had discontinued smoking, the rate of student smoking was almost as low as when neither parent had ever been a smoker. Student smoking behavior tended to conform more closely to that of the father, with the smoking behavior of the mother appearing to exert very little influence.

The rate of cigarette smoking among students was inversely related to the education level of parents. (See Table 5). The highest rate of smoking, 31.8 percent for boys and 19.7 percent for girls, occurred when neither the mother nor father graduated from high school. The lowest rate of student smoking was reported when both parents attended or graduated from college (18.0 and 11.9 percent for boys and girls respectively). This inverse relationship of student smoking rate to parental education level held fairly constant for boys through the grades until the year in high school. This suggests that the educational level of the parents is a contributing factor in determining smoking behavior of the student at an early age but that this influence diminished by the later years of high school.

TABLE 5

RELATIONSHIP BETWEEN PARENTS' LEVEL OF EDUCATION AND THE PERCENT OF THEIR CHILDREN SMOKING

	Parents Attended or Graduated from College	Parents Graduated from High School	Neither Parent a High School Graduate
Boys	18.0	21.0	31.8
Girls	11.9	12.9	19.7

Age Within Grade

Since it was possible to determine the exact birthdate of the student from the smoking survey questionnaire, the students were grouped into five distinct classifications; above modal age, upper two months modal age, middle eight months modal age, lower two months modal age, and below modal age. Table 6 (See Appendix C) shows that there was a relatively higher proportion of smokers among those students who were above the "modal" age for their class grade.

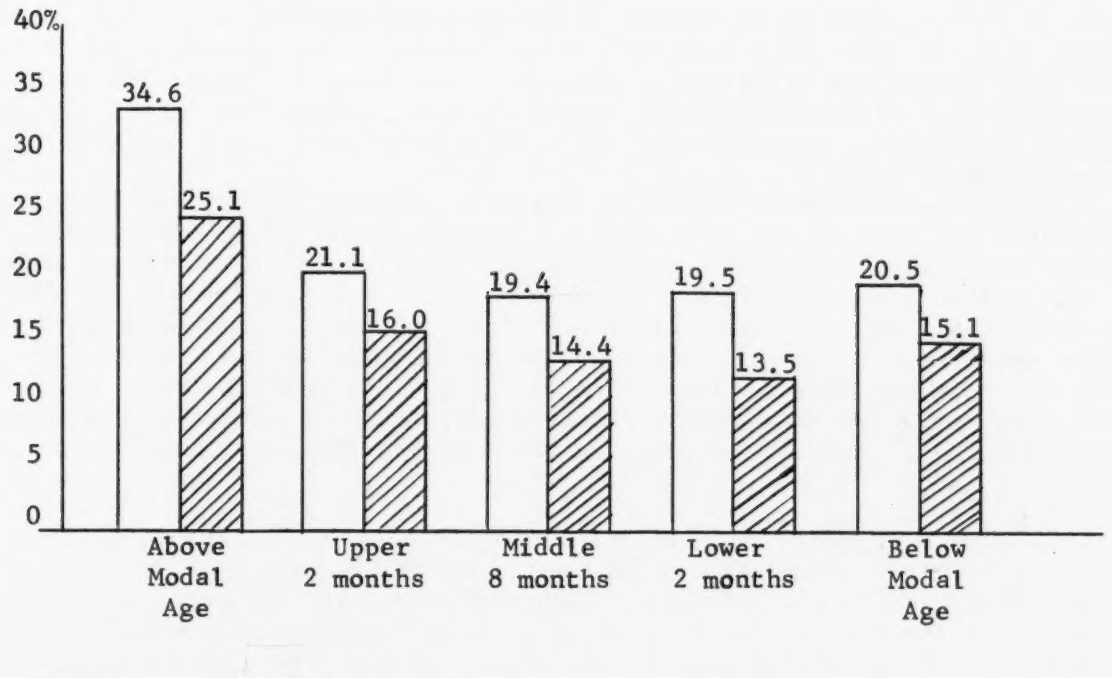
The relationship of the age factor to smoking appeared to be consistent for both sexes throughout the grades. Also, in this regard Figure 2 reveals that, when all grades were combined, a higher rate of smoking was evident among the older or above modal age students for both boys and girls. In contrast, the percent of smokers was relatively the same for all other age classifications.

The percentage of smokers for the below modal age girls was relatively less when compared with those of "typical" age until the tenth grade. There the proportion altered so that those girls in the younger age group showed a similar rate of smoking to that of the other age group. It would appear that these younger girls follow the behavior patterns of their older classmates.

Further analysis of the data also revealed that the middle eight months modal age group tended to be occasional smokers. By contrast the older, above modal age, students were more likely to be regular smokers.

FIGURE 2

AGE RELATIONSHIP TO PERCENT OF SMOKING
BY SEX (ALL GRADES COMBINED 7 - 12)



Organized Interscholastic Athletic Participation

Tables 7 (See Appendix C) and 7a show that boys who did not take part in interscholastic athletic activities had a higher rate of smoking than those who did participate in organized athletics. This was particularly noticeable in Table 7a which indicates that 85.9 percent of the regular smokers did not participate in organized competition in contrast

TABLE 7a

PERCENTAGE DISTRIBUTION WITHIN EACH SMOKING CLASSIFICATION BY SEX AND ORGANIZED INTERSCHOLASTIC ATHLETIC PARTICIPATION (ALL GRADES COMBINED)

	BOYS			GIRLS		
	No Participation	Participation	Total Number	No Participation	Participation	Total Number
Regular	85.9	14.1	1378	92.1	07.9	698
Occasional	77.2	22.8	1309	90.1	09.9	1126
Ex-Regular	72.1	27.9	512	90.8	09.2	229
Ex-Occasional	68.3	31.7	3958	89.6	10.4	3156
Never	72.0	28.0	4561	90.6	09.4	6470
TOTAL	73.0	27.0	11718	90.4	09.6	11679

to the 14.1 percent of regular smokers who did participate. Of those classified as "never smoked," 28.0 percent participated in organized athletic programs. However, this distinction did not appear to be applicable to the smoking behavior of girls. As noted in Table 7a, 92.1 percent of the regular smokers did not participate in organized athletics, while 90.6 percent of those in the "never" smoked category also did not participate. However, caution should be exercised in interpreting these data and the possible relationships between athletic participation and smoking among these girls. There are other factors that influenced girls' participation. For example, during the period of this study interscholastic athletic competition for girls was frowned upon by the Illinois Girl's Athletic Association. Consequently, there were relatively fewer opportunities for athletic competition among girls.

A higher percentage of seventh grade male athletes smoked than did non-participants. This finding may reflect the fact that the seventh grade athlete was older, and frequently more physically mature than the seventh grade non-athlete. It was also probable that his physical skills were more advanced at this point in his development and thus he was able to compensate for any detrimental physiological effects which smoking might have had on his athletic performance. However, as athletic competition became more intense and more highly structured among the boys from the seventh through the twelfth grade, the percentage of smokers among male athletes remained fairly constant. In contrast, the percentage of smokers among male non-athlete group showed a marked increase through these grades.

School Activities

Table 8 (See Appendix C) shows the relationship between smoking and participation in school activities other than athletics. Categories range from no time to over five hours per week. As in athletics, a higher percentage of smokers were non-participants. In addition to the higher rate of smoking in this category, there appeared to be an inverse relationship between smoking and participation. As participation increased the incidence of smokers tended to decrease. For example, 75 percent of the regular cigarette smokers did not participate in any school activity while 05.9 percent of the regular smokers spent over five hours per week in school activities. This trend was more noticeable among the boys than the girls. (See Table 8a).

TABLE 8a

PERCENTAGE DISTRIBUTION WITHIN EACH SMOKING CLASSIFICATION BY SEX ACCORDING TO TIME SPENT IN SCHOOL ACTIVITIES OTHER THAN ATHLETICS (ALL GRADES COMBINED)

	BOYS						GIRLS					
	None	Less Than 1 Hour Per Week	1-2 Hours Per Week	3-5 Hours Per Week	Over 5 Hours Per Week	TOTAL	None	Less Than 1 Hour Per Week	1-2 Hours Per Week	3-5 Hours Per Week	Over 5 Hours Per Week	TOTAL
Reg.	75.0	07.9	06.9	04.3	05.9	1391	63.2	11.1	14.4	06.3	05.0	701
Occ.	63.9	12.5	09.8	06.6	07.2	1323	48.5	14.0	20.3	12.0	05.1	1129
Ex-Reg.	62.6	11.3	10.6	06.5	09.0	521	49.4	10.3	23.6	11.2	05.6	233
Ex-Occ.	56.8	12.6	11.3	09.1	10.3	3964	38.5	17.7	23.7	13.8	06.3	3172
Never	55.1	11.8	12.5	10.1	10.5	4565	37.9	15.7	24.5	13.8	08.1	6509
TOTAL	59.3	11.7	11.0	08.5	09.4	11764	40.8	15.7	23.3	13.1	07.1	11744

Participation in Community Activities

Table 9 shows again that there appears to be an inverse relationship between the rate of smoking and the extent of participation in community activities. Among the regular male smokers 60.1 percent of the group did not participate in community activities. On the other hand, only 05.4 percent of the regular smokers group did participate over five hours per week in community activities.

TABLE 9

PERCENTAGE DISTRIBUTION WITHIN EACH SMOKING CLASSIFICATION BY SEX ACCORDING TO TIME SPENT IN COMMUNITY ACTIVITIES (ALL GRADES COMBINED)

	BOYS						GIRLS					
	None	Less Than 1 Hour Per Week	1-2 Hours Per Week	3-5 Hours Per Week	Over 5 Hours Per Week	TOTAL	None	Less Than 1 Hour Per Week	1-2 Hours Per Week	3-5 Hours Per Week	Over 5 Hours Per Week	TOTAL
Reg.	60.1	07.9	16.5	10.1	05.4	1388	55.4	10.5	18.4	10.8	05.0	697
Occ.	49.2	10.0	20.6	13.5	06.7	1323	41.0	12.5	27.9	13.3	05.3	1128
Ex-Reg.	49.5	11.7	20.2	10.2	08.4	521	42.7	10.3	21.1	16.8	09.1	232
Ex-Occ.	40.2	10.9	26.3	14.4	08.1	3973	35.1	13.6	29.1	16.5	05.4	3178
Never	36.7	10.8	27.4	16.8	08.3	4573	30.0	12.6	32.5	17.4	07.4	6518
TOTAL	42.6	10.4	24.7	14.6	07.7	11778	34.2	12.7	30.2	16.4	06.6	11753

Educational Expectations

The educational expectations of the junior and senior high school students particularly with reference to attending college appear to be directly related to smoking behavior. Among the boys, only 28.8 percent of the regular cigarette smokers planned to attend college, whereas 61.8 percent of those who never smoked indicated plans to enter college. Among the girls, the corresponding percentages were 19.6 percent and 48.2 percent. (See Table 10a).

TABLE 10a

PERCENTAGE DISTRIBUTION WITHIN EACH SMOKING CLASSIFICATION BY SEX AND EDUCATIONAL EXPECTATIONS (ALL GRADES COMBINED)

	BOYS						GIRLS					
	Not Finish High School	Finish High School	Go to College	Education Other Than College	Uncertain	TOTAL	Not Finish High School	Finish High School	Go to College	Education Other Than College	Uncertain	TOTAL
Reg.	05.2	38.4	28.8	11.9	15.7	1381	02.9	35.1	19.6	24.5	18.0	699
Occ.	02.8	29.4	44.0	10.7	13.1	1324	02.0	30.5	31.3	23.6	12.6	1127
Ex-Reg.	03.9	29.1	42.6	11.2	13.3	519	01.7	28.8	31.3	21.9	16.3	233
Ex-Occ.	00.7	21.2	53.8	11.1	13.1	3975	01.0	22.4	40.1	24.9	11.5	3184
Never	00.8	17.3	61.8	09.7	10.4	4585	00.6	18.0	48.2	22.3	10.9	6534
TOTAL	01.6	23.0	52.4	10.6	12.4	11784	01.0	21.6	42.3	23.2	11.8	11777

Smoking Environment

An examination of the data from Table 11 indicates that a particular environment exerted no special influence on the heavy smoker. Over 90 percent of the heavy smoking males indicated that they smoked at any time or place. On the other hand, smoking was

much more a social activity for the light smoker, with 56.5 percent of this group indicating that they smoked with people of their own age.

TABLE 11

PERCENTAGE DISTRIBUTION OF CURRENT SMOKERS BY AMOUNT SMOKED ACCORDING TO USUAL SMOKING ENVIRONMENT (ALL STUDENTS)

BOYS BY AMOUNT OF CIGARETTES SMOKED

USUAL SMOKING ENVIRONMENT	LESS THAN 1 PACK (20) A WEEK	ABOUT 1 PACK (20) A WEEK	ABOUT 2 PACKS (40) A WEEK	ABOUT 3 PACKS (60) A WEEK	MORE THAN 3 PACKS (60) A WEEK	ALL STUDENTS
When Alone	13.3	06.7	05.1	03.0	02.0	08.1
When with Own Age Group	56.5	35.2	19.3	15.9	06.2	34.9
When with Older People	03.0	03.9	00.9	02.6	01.2	02.5
Any of These Times	27.1	54.2	74.6	78.5	90.6	54.4
Per Cent	99.9	100.0	99.9	100.0	100.0	99.9
Number of Smokers	1134	389	331	270	498	2622

GIRLS BY AMOUNT OF CIGARETTES SMOKED

When Alone	17.0	09.2	05.4	02.6	05.6	12.6
When with Own Age Group	56.5	48.3	31.7	13.9	06.3	45.8
When with Older People	02.5	03.9	05.4	07.8	07.0	03.8
Any of These Times	24.0	38.5	57.4	75.7	81.0	37.8
Per Cent	100.0	99.9	99.9	100.0	99.9	100.0
Number of Smokers	1043	304	183	115	142	1787

The length of time that current regular cigarette smokers stated that they had been smoking varied considerably by the amount smoked for both boys and girls. (See Table 12). Over one-half of the total male population had been smoking for more than two years whereas slightly more than one-third of the girls had been smoking for the same period. Analysis of student answers to this question by grade and sex revealed that 45.6 percent of the seventh grade male regular smokers indicated that they had smoked cigarettes for more than two years, while the corresponding percentage for girls was 30.0 percent.

Comparing Results of the Two Studies

A number of factors have been identified and studied to assess their relationship to smoking behavior among junior and senior high school students. The findings of the Illinois study concurred with many of those reported in the 1958 Horn study. Both studies showed that a relationship existed between smoking behavior and the following items: parental education; parental smoking behavior; age within grade; participation in athletics; extra-curricular and community activities; patterns of smoking; and smoking environment. However, several major differences and trends in smoking practices were revealed by the University of Illinois study. In order to make a direct comparison of the smoking behavior of the Rockford school population with the Portland data, it was necessary to adjust for variations as to the grade and place of residence. Tables 13 and 14 show the comparative smoking rates of students by grade and by sex for the two school populations.

An examination of these differences suggests that a higher proportion of youngsters in school are starting to smoke earlier today as compared to those studied in 1958. Of particular significance is the fact that the smoking practices of the girls in Rockford had increased substantially during the earlier high school years. However, the overall rate of smoking among high school youth did not appear to have altered significantly.

With respect to the relationship of student smoking behavior to the smoking practices of the parents, it was interesting to note that in the Rockford population, the smoking practices of both males and females tended to conform more closely to the father's smoking habits. Horn found that the smoking behavior of boys tended to be similar to that of the father, whereas the smoking behavior of the girls followed more closely that of the mother.

Differences were observed in the Rockford and Portland studies with respect to the rate

Table 12

Percentage Distribution of Current Regular and Occasional Smokers by Amount According to Length of Time Smoked (All Students)

Boys By Amount Smoked

Length of Time Smoked	Less than 1 pack a week		About 1 pack a week		About 2 packs a week		About 3 packs a week		More Than 3 packs a week		ALL SMOKERS	
	Reg.	Occ.	Reg.	Occ.	Reg.	Occ.	Reg.	Occ.	Reg.	Occ.	Reg.	Occ.
Less than One Month	09.4	14.1	06.1	07.0	02.4	03.8	00.6	23.5	01.4	00.0	03.2	13.0
From one Month to One Year	40.6	35.3	26.8	35.9	28.8	30.8	17.1	17.6	09.1	12.5	21.6	34.8
For More Than One Year Up To Two Years	18.9	21.1	28.7	25.0	27.8	38.5	27.1	29.4	16.8	12.5	23.5	22.1
More Than Two Years	31.1	29.5	38.4	32.0	41.0	26.9	55.2	29.4	72.6	75.0	51.7	30.1
Percent	100.0	100.0	100.0	99.9	100.0	100.0	100.0	99.9	99.9	100.0	100.0	100.0
Number of Smokers	106	793	164	128	212	26	181	17	285	8	948	972

Girls By Amount Smoked

Less than One Month	14.6	17.3	03.9	05.0	00.8	10.0	00.0	00.0	01.2	33.3	04.0	15.8
From One Month to One Year	41.6	47.2	38.6	36.4	22.9	45.0	20.0	00.0	08.2	00.0	27.3	45.4
For More Than One Year Up to Two Years	22.5	22.1	30.7	27.3	34.7	25.0	33.3	100.0	34.1	33.3	31.2	23.0
More Than Two Years	21.3	13.4	26.8	31.3	41.5	20.0	46.7	00.0	56.5	33.3	37.4	15.7
Percent	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.9	99.9	99.9
Number of Smokers	89	733	127	99	118	20	75	2	85	6	494	860

of student smoking according to the type of school system attended (parochial, urban, and rural). Horn found that the smoking rate was highest among students in the parochial schools (32.0 percent), whereas in Rockford, the public school students had a higher smoking rate.

TABLE 13

PERCENT OF SMOKERS (BOYS AND GIRLS COMBINED)
AMONG PORTLAND AND ROCKFORD STUDENTS

	Percent of Smokers by Grade				
	9	10	11	12	Total
Portland	12.5	21.2	27.9	35.1	23.3
Rockford	18.7	22.4	26.1	30.3	23.8

TABLE 14

PERCENT OF SMOKERS BY SEX AMONG
ROCKFORD AND PORTLAND STUDENTS

	Rockford		Portland	
Grade Level	Boys	Girls	Boys	Girls
9	23.7	13.8	18.3	06.3
10	25.4	19.5	29.6	13.0
11	30.9	21.2	35.4	20.1
12	33.3	27.3	39.6	30.6
Total	27.8	19.8	30.0	16.5

Experimental Phase

As in the Horn study, the experimental phase involved five (5) experimental groups and one control group. The groups were matched as closely as possible according to their rate of smoking, with the experimental and control groups being randomly assigned. The five message themes employed were the (1) contemporary, (2) remote, (3) both-sided, (4) authoritative, and (5) adult-role-taking. The contemporary theme stressed those factors which would appear to have current meaning to the teenager, (i.e. a smoker would less likely be a school leader in athletics or school activities). The remote message was concerned with the relationship of smoking to diseases which were more likely to develop later in life. The both-sided approach presented the pros and cons of the smoking problem and suggested that the individual make his own decision regarding smoking. The authoritative theme relied on the appeal of the traditional authoritative figures of the parent, teacher, coach, and doctor for its impact on influencing smoking behavior. In the adult-role-taking message, the teenager played the role of an adult attempting to persuade another adult not to smoke, thus subtly influencing himself not to smoke. The material presented to the teenager in this approach like the Horn study stressed that much of the evidence relating to the health hazards of smoking had been uncovered since the adults of today had taken up the smoking habit.

The experiment was conducted over the period from October, 1966, to May, 1967. The different educational treatments were presented in the form of pamphlets, flyers and posters. Sets of these mass communication materials were prepared in accordance with five (5) different message themes and then distributed to the respective experimental groups. A series of three (3) distributions were carried out during the period from February to April, 1967, with a three week interval between each distribution.

Following the experimental period, the survey form or instrument was re-administered to assess the impact of the different message themes on the attitudes, beliefs, and smoking habits of the junior and senior high school youth.

Data collected from the experimental and control groups were analyzed in three ways: (1) by calculating the smoking net recruitment rate,* (2) by measuring the changes in proportion of smokers, and (3) by measuring the changes in attitude scale scores.

Findings of the Experimental Phase

The smoking net recruitment rate was used to show the differences between the various message themes with respect to changes occurring in the smoking practices of the students from the pre- to posttest administration. Table 15 indicates that the contemporary message appeared to be the most effective in causing a lower smoking recruitment rate. On the other hand those message themes that seemed to be least effective in reducing the smoking recruitment rate were the both-sided approach for boys and the remote message theme for girls. When the sexes were combined the group that used the adult-role-taking approach had the next to lowest recruitment rate.

Since there was no way to interpret the meaning of differences in smoking net recruitment rates, the statistical procedure for evaluating the differences of changes of correlated proportions as discussed by McNemar[1] was used.

For this analysis the smoking behavior was placed into one of four different categories: (1) smoker on the pre- and posttest, (2) non-smoker on the pre- and posttest, (3) smoker on the pre- and non-smoker on the posttest, and (4) non-smoker and the pre- and smoker on the posttest.

Table 15a (See Appendix C) shows the results of the t test of significance of difference of changes in smoking behavior by various message themes. Since the message themes were given by schools, the degrees of freedom for determining a significant difference (.05 level) were for schools and not for individual students. This table shows the relative effectiveness of the different message themes in preventing youth from initiating the smoking habit. However, in interpreting these results it should be noted that only the contemporary theme group had a significantly lower proportion of smokers than the controls. Significant differences between the message themes were as follows:

a. The contemporary theme was more effective than either the remote or both-sided approach;

b. The adult-role-taking theme was more effective than either the remote or both-sided approach; and

c. The authoritative theme was more effective then either the remote or both-sided approach.

These findings appear to be in direct contrast to those reported by Horn in the Portland study, where the remote message was the most effective in preventing youth from taking up the smoking habit.

In summary, the factors associated with youth smoking identified by Horn in the earlier Portland research were re-examined by this study. The Illinois findings were in general agreement with those from the Portland study regarding the statistical correlations of smoking. However, the extent of smoking among the ninth grade Illinois girls was markedly higher than that of the girls in Horn's study. Aside from the possibility of sample variation, the higher smoking rate in the Illinois study might indicate a genuine trend toward earlier age smoking among girls.

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*The smoking net recruitment rate was calculated by subtracting the percentage of smokers on the pretest from the percentage of smokers on the posttest and dividing by the percentage of non-smokers on the pretest.

The results of the mass communication message experiment were generally inconclusive and failed to confirm the results of the 1958 experiment in Portland. In effect, only one of the five mass communication messages, the contemporary theme, appeared to have a significant effect on youth smoking.

TABLE 15

CHANGES IN SMOKING PRACTICES BY SEX BY EXPERIMENTAL MESSAGE

MALES

Message	No.	Pre-Survey % SM	Pre-Survey % NS	Post-Survey % SM	Post-Survey % NS	Per Cent Change	Net Recruitment Rate
Contemporary	1935	23.51	76.49	25.89	74.11	02.38	3.11*
Adult Role Taking	1453	20.58	79.42	23.74	76.26	03.17	3.99*
Authoritative	1203	20.03	79.97	25.52	74.48	05.49	6.87*
Control	1454	18.36	81.64	22.90	77.10	04.54	5.56*
Remote	1469	21.24	78.76	26.07	73.93	04.83	6.13*
Both Sided	1760	19.54	80.46	26.93	73.07	07.39	9.18*
TOTAL	9274	20.70	79.30	25.18	74.82	04.48	05.65

FEMALES

Contemporary	1922	14.67	85.33	15.35	84.65	00.68	0.80
Adult Role Taking	1514	12.42	87.58	15.19	84.81	02.77	3.16*
Authoritative	1347	12.47	87.53	13.81	86.19	01.34	1.53
Control	1406	14.65	85.35	17.35	82.65	02.70	3.16*
Remote	1755	17.32	82.68	23.48	76.52	06.16	7.45*
Both Sided	1634	12.00	88.00	16.40	83.60	04.40	5.00*
TOTAL	9578	14.03	85.97	17.07	82.93	03.04	3.54*

COMBINED

Contemporary	3857	19.11	80.89	20.64	79.36	01.53	1.89*
Adult Role Taking	2967	16.41	83.59	19.38	80.62	02.97	3.55*
Authoritative	2550	16.04	83.96	19.33	80.67	03.29	3.92*
Control	2860	16.54	83.46	20.18	79.82	03.64	4.36*
Remote	3224	19.11	80.89	24.66	75.34	05.55	6.86*
Both Sided	3394	15.91	84.09	21.86	78.14	05.95	7.08*
TOTAL	18852	17.30	82.70	21.10	78.90	03.80	4.59*

* A significant increase (.05 level) in percent of smoking from pre to post surveys.

References

1 Horn, Daniel, et. al., "Cigarette Smoking Among High School Students," American Journal of Public Health, 49, 11: 1497-1509, November, 1959.

2 McNemar, Quinn, Psychological Statistics, New York: John Wiley and Sons, 1962.

CHAPTER III

STUDENT CENTERED APPROACHES TO BEHAVIOR AND ATTITUDE CHANGE

Donald J. Merki

Since the Horn Portland study of 1958 a number of anti-smoking campaigns, programs, surveys and studies have been undertaken. The majority of these projects have not been successful in their attempts to (1) convince the youths who have already begun smoking to adopt non-smoking behavior or (2) deter the non-smokers from taking up the habit. Few, if any, studies attempted to reinforce the decisions of the non-smoker to maintain this position, so successes or failures in this area are not known. Furthermore, several of these studies concentrated on presenting large inputs of information about cigarette smoking and health in a short time. The information was presented in various ways: some were mass media oriented, relying heavily on printed materials; some utilized extensive audio-visual aids and technical equipment; some relied heavily on guest speakers, school assemblies, panel discussions debates and the like.

These three factors then, the failure of most anti-smoking projects to influence smoking behavior, the recent developments related to the health hazards of smoking, and the approaches used in previous studies, led to the development of the student-centered approach as a means of influencing smoking behavior.

The student-centered approach takes into account the value of human interaction in the educational setting; the widely accepted role of peer group influences in the adolescent stage of development; and the possible negative effects of authoritarian figures such as the teacher, coach or physician, in the implementation of anti-smoking programs.

Just as the peer group has profound influence on the adolescent's attitudes and behavioral patterns with regard to dress, sex, drugs, alcohol, parents, school and so forth, it also affects the personal decisions about cigarette smoking. Bergen and Olensen,[1] Jensen and Thompson,[3] and Eriksson[2] all have reported the strong influence of the peer group in this decision making process concerning smoking or not smoking. Since the tendency today is for the peer group to influence individuals to begin smoking, can this same peer group influence be used to prevent youth from initiating cigarette smoking?

The major purpose of this study was to determine the value of a student-centered method as compared to a mass communication method in anti-smoking programs. The mass communication method used in the study was very similar to the approach used by Horn in the Portland study. It involved the dissemination of information about smoking through pamphlets, flyers and posters.

In order to evaluate the effectiveness of these methods, experimental and control groups were established, using selected groups of junior and senior high school students. Schools were selected according to three criteria: (a) the size and number of classes, (b) the number of smokers and (c) the geographic location. The format of the student-centered approach necessitated omitting large schools from consideration. Schools containing a recognizable number of smokers were selected so that the effectiveness of the two methods could be more readily determined. Lastly, schools geographically removed from each other were selected in order to prevent contamination between students of different schools.

The subjects involved in this study were eighth and eleventh grade boys and girls from 12 junior and 5 senior high schools in the rural areas of Winnebago County, Illinois. This included 36 classes of eighth and eleventh grade students, divided evenly with 18 classes at each level. There were 730 eighth grade students and 392 senior high school students.

The student-centered method used in the study employed a symposium consisting of four students for each class who were nominated by school administrators, counselors, English and speech teachers in the individual schools. Two criteria were used in the selection of the symposium members: first, the ability of the individual to express himself, and secondly, the general class acceptance or esteem in which the individual was held.

After students were nominated for the symposium, they were interviewed to ascertain their willingness to participate. The details of the symposium were explained to all of the nominees. Those students agreeing to participate in the activity were assigned to groups within their own homeroom. In those instances where the students declined, the school staff and administrative personnel selected alternates for consideration and the same procedures were followed.

Approximately four days before each of the three scheduled symposiums were to be held, reading material was given to the various participants. These selections were chosen because of their appropriate content with regard to various aspects of cigarette smoking. Each member was asked to read the material and be prepared to comment on the aspects of cigarette smoking contained therein. The symposium members were allowed to use additional material, either in support of or in opposition to the topic being discussed. The day before each scheduled symposium was held the remainder of the class were given copies of the same materials. This was done to enable the class members to become informed about the topic beforehand and thus eliminate the need for the symposium members to spend much of their time explaining the content of the materials to the class.

During the conducting of the symposium, the research investigator was alone with the students. The symposium began with a statement by one of the members as to the order of presentations. Each member of the symposium was allowed up to two minutes to express his point of view. When all four members of the symposium had finished their presentations, the class members addressed questions to the symposium panelists. If the class did not initiate questions, the speakers took the prerogative of asking questions of various class members. It was apparent that the members of the class who were questioned by the four members were those who had made known their past feelings about cigarette smoking and were being pressed to defend, or at least restate their positions publicly before the class.

Three symposiums were presented for each class, with a three week interval separating each meeting. Each of the sessions lasted thirty minutes.

The effects of the peer-centered approach on the behavior of the junior and senior high school students were measured in the following ways. The students included in this study were part of the total population of approximately 25,000 Winnebago County junior and senior high school students. Therefore these students were included in the original survey which assessed their attitudes and beliefs and practices with regard to smoking both before and after the experimental treatment.

To assess any changes in smoking behavior that may have resulted from the peer-centered approach, the net recruitment rate was calculated. Horn used this rate in his 1958-59 Portland study to determine the effects of his five message themes on the smoking practices of high school students.

Horn defined the net recruitment rate as the difference between the proportion of regular smokers at the beginning and at the end of the school year expressed as a percentage of the proportion of non-smokers at the beginning of the year. For example, if 20 percent of a group were regular smokers at the beginning of the year and 28 percent were by the end of the year, the increment would be 8 percent. This figure would be expressed as 8 percent of the 80 percent of the group who were non-smokers at the beginning of the year. This gives a net recruitment rate of 8/80 or ten percent of the non-smokers recruited in calculating the net recruitment rate.

In order to contrast the effect of the peer-centered approach with other methods, a mass communication approach, consisting of pamphlets, flyers, and posters designed to persuade the student not to smoke, was introduced into several schools at both the eighth and eleventh grade levels. Accompanying the individual materials given to each student were sets of posters which were placed in prominent places in the respective schools.

Subject matter for all materials was taken from current literature relating to cigarette smoking and health. Art work for the materials was done in cooperation with the Department of Advertising, College of Journalism, University of Illinois.

In addition to the mass communication method, a mixed approach was attempted. This technique consisted of student symposiums during the first and third treatments, and the distribution of mass communication materials during the second exposure. The student-centered, mass communication and mixed approaches were offered at three week intervals.

Finally, an elementary and secondary school were selected to serve as control schools. Students in the control schools did not receive any educational treatment during the entire experimental period and were involved only in the pre- and posttest administration of the survey instrument.

Results of the Study

Tables 16 and 17 show the number and percentage of smokers by school, at the eighth and eleventh grade respectively, before (pretest) and after (posttest) the educational treatments.

Since the net recruitment rate technique could not be used to interpret the meaning of differences between experimental groups, the differences in the rate of increases in smoking behavior were evaluated by the use of the correlated proportions technique, as discussed by McNemar. This technique was deemed appropriate because the analysis involved pretest and posttest measures of the same individuals. No significant differences were found with respect to smoking practices between the groups when calculated by the correlated proportions technique.

There were significant differences between the two groups in the attitudinal changes toward smoking, as determined by the analysis of covariance. In nine of the fifty-nine analyses at the eighth grade level the student-centered group showed significantly (.05) greater changes in the attitude scores than did the mass communication group. No significant differences were found between the experimental groups at the eleventh grade level.

TABLE 16

ANALYSIS OF CHANGES IN THE RATE OF SMOKING OCCURRING OVER THE EXPERIMENTAL PERIOD AMONG THE EIGHTH GRADE EXPERIMENTAL AND CONTROL GROUPS AS DETERMINED BY THE NET RECRUITMENT RATE[a]

	School	Method	Message	NRR[a]
Eighth Grade	A	Student-Centered	Contemporary	38.5 %
	B	Control		16.4 %
	C	Mass Communication	Contemporary	0.0 %
	D	Mixed	Contemporary	13.8 %
	E	Student-Centered	Remote	7.8 %
	F	Student-Centered	Contemporary	6.7 %
	G	Mass Communication	Contemporary	____[b]
	H	Student-Centered	Remote	28.6 %
	I	Mass Communication	Remote	4.48%
	J	Mass Communication	Remote	6.07%
	K	Student-Centered	Contemporary	____[b]
	L	Student-Centered	Remote	4.0 %

[a]Net recruitment rate is calculated by subtracting the percent of smokers on the first survey from the percent of smokers on the posttest, dividing by the percent of non-smokers on the first survey.

[b]Reductions in number of smokers, thus net recruitment rate could not be calculated.

TABLE 17

ANALYSIS OF CHANGES IN THE RATE OF SMOKING OCCURRING OVER THE EXPERIMENTAL PERIOD AMONG THE ELEVENTH GRADE EXPERIMENTAL AND CONTROL GROUPS AS DETERMINED BY THE NET RECRUITMENT RATE[a]

	School	Method	Message	NRR[a]
Eleventh Grade	M	Mass Communication	Contemporary	6.7 %
	N	Mass Communication	Remote	18.2 %
	O	Control	Control	16.4 %
	P	Student-Centered	Remote	3.2 %
	Q	Student-Centered	Contemporary	12.8 %

[a]Net recruitment rate is calculated by subtracting the percent of smokers on the first survey from the percent of smokers on the posttest, dividing by the percent of non-smokers on the first survey.

Implications for Anti-Smoking Education

The results of this study, utilizing a peer-centered approach in attempting to influence the cigarette smoking attitudes and practices of junior and senior high school students, offer a meaningful contribution to the learning situation. While there were no significant changes in smoker behavior there were some positive changes in student attitudes.

A number of factors militated against the success of the student-centered approach in the experimental schools involved in this study. If alleviated, this method could be used more effectively. First of all, some classes and some schools were operated in an authoritarian manner. This may have led to a weakened credibility. Secondly, a time span of three months elapsed between the first administration of the survey and the exposure to the different approaches. Since the incidence of cigarette smoking increases with age, students may have started smoking in the interim between the administration of the survey and the launching of the experiment. While this weakness would be evenly spread over all the methods, it could dilute the effectiveness of each technique when viewed statistically. When the first survey was administered, no rapport had been established between the research investigator and the students. Since smoking may have led to repercussions, it might be suspected that some students, particularly those in the authoritative school settings, might have indicated that they were non-smokers. After the students became aware that they were not threatened by giving true responses, some may have reversed their previous answer and admitted to being smokers on the second survey.

In addition to these limitations, the experimental period was short, and it is difficult to change attitudes and practices that are built up over a long period of time.

The positive implications of such an educational technique are numerous. First, since the peer group has clearly been identified as a factor in influencing adolescent behavior, in general, and cigarette smoking in particular, this method gives the teacher an opportunity to use this powerful force in a constructive manner. Secondly, it would appear that the motivations for initiating cigarette smoking are quite similar to those operative in alcohol use and drug abuse. Therefore, this technique might be utilized wherever the peer influence plays a part in adolescent behavior, such as sexual relationships, consumer practices, diet, personal care and fitness, among others. Thirdly, this method affords the teacher insight into the mechanisms of motivation during adolescence. Fourthly, it aids teacher-student relations by recognizing that the student makes a valuable contribution to the learning process. Lastly, it affords the opportunity for young people to view a problem and talk it through themselves, thereby developing some valuable skills in the maturation process.

References

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CHAPTER IV

PARTICIPANT OBSERVATION STUDY OF THE SOCIAL DYNAMICS OF CIGARETTE SMOKING

Ian M. Newman

At the time of this study an important characteristic which distinguished the act of smoking among junior high school pupils from smoking among the adult population was its illegality. As one student put it, "When the teachers can't see the kids, the kids smoke and when the kids can't see the teachers, the teachers smoke." This dimension of secrecy, practiced primarily by the adolescents, was important in determining how, when, and where cigarettes were smoked.

Accordingly, one phase of this project was devoted to a study of the smoking act in its social context. Rather than attempting to explore this aspect with additional questionnaire techniques, a nine month project utilizing participant observation and informal personal interviews was developed. This program was conducted in a large (1,800) urban junior high school and involved a random sample of ninth grade students. The sample, divided into categories of twenty students each, was composed of male smokers, female smokers, male non-smokers, and female non-smokers. One of the study team spent the entire school year in the school as a pupil personnel worker. Time was spent with the subject establishing such rapport that the investigator was able to document information usually not directly available. This effort focused specifically on four areas: (1) an attempt to describe the smoking act in the school;(2) an exploration of the influences of cigarette smoking on students' social status; (3) exploration of the influences of the peer group on the smoking incidence, and; (4) exploration of the ways smokers and non-smokers perceived and responded to the expectations of their parents, the school, and their peers.

Smokers and the Smoking Act

To the adolescent in the ninth grade it appeared that American society was divided on the question of the health effects of cigarette smoking. Traditionally, smoking had been a custom practiced mainly by the male members of the society. More recently it had become an acceptable practice for women to smoke. Also, the longstanding prohibitions against youth smoking were frequently violated. Health and medical groups, which had often implied that cigarette smoking might be detrimental to health, were beginning to take more affirmative action in opposition to smoking. Although much information about the harmful effects of cigarettes was being directed to the general public, it was apparent from the actions of adults that they did not heed the warnings.

This situation was further complicated by the fact that machines dispensed cigarettes to any consumer, regardless of age. Advertising enhanced the pleasures of smoking through subtle inferences. Adults openly violated no smoking signs and ordinances. Even members of the Board of Education disregarded the many "no smoking" signs posted on the walls of their conference room.

However, the state law left little doubt as to the expected behavior of young people.

> Every person under the age of eighteen (18) years, and over the age of seven years, who shall smoke or use cigarettes, on any public road, street, alley or park or other lands used for public purposes, or in any public place of business or amusement, shall be guilty of a misdemeanor and punished for each offense by a fine of not more than ten dollars ($10).

This confusion and inconsistency related to cigarette smoking was recognized by the young. If they chose to violate the law and the tradition, they rationalized their

behavior on the basis of the widespread societal ambivalence that existed.

Daily Smoking Patterns

While smoking patterns differed with each subject, there appeared to be four general configurations which characterized these school-age smokers. These are illustrated with statements from four of the subjects recorded during the course of the study.

The first was from a fifteen-year old girl who seemed little concerned with smoking as a social act since most of her smoking was done alone.

> I've been smoking about one pack a day for quite a while now. I usually have one before I come to school, but I never let my parents know that I smoke before school. Although my mother smokes and my dad don't, I don't like to smoke in front of them. Usually about the second period in the morning I go to the washroom and have a cigarette. I have to alternate these periods a little bit so the teachers don't begin to suspect something although you know, I wonder if they thought I had kidney trouble. It's much safer to smoke in the bathrooms during a class than between classes because there's too many kids around and you get caught. It's a bit better to be on your own too. I usually have two or three others during the day in much the same way and then after school I'd go home, take a rest and smoke some more. In the evening after supper I'd usually smoke the rest.

The second, a fifteen-year old boy, smoked with one of his parents and with other students. However, he did not smoke in school during the day.

> I've been smoking for about two years. I started in the seventh grade because everybody else was doing it and they were calling me a sissy. I hung out 'til the second semester and then started with the rest of the kids.
>
> On a usual day I'll have a couple before school, and mostly one with my ma before leaving home. My dad, he's already gone to work by then--he don't like me smoking. I'll have one while waiting for the bus and then one on the bus coming to school. I don't usually have any during the day because you're too likely to get caught. After school I have one outside before the bus comes and then another on the bus riding home. After supper I usually go out riding with some friends and smoke three or four more.

A third and perhaps most common configuration characterized the "experimental" smoker. This pattern of smoking was unplanned and casual but was always conducted with friends and often with friends who were regular smokers.

> I've never bought any cigarettes, I usually grab them from whoever has them. When there's a bunch of us walking home from the game or from "rec" night, I usually have one.

The fourth type of smoker was the one who caused the most disciplinary problems for the school. Unlike the other smoker types which were characterized by a time or situational limitation on smoking, this individual could not resist the temptation to smoke. He smoked alone or with others, whenever the opportunity presented itself.

> After my dad goes to work, I usually have one with my ma and then another one on the way to school. You can usually get one more outside the building before you come in and then after second hour you can get at least half a one if you hurry in the washroom upstairs. At lunch time I usually have one outside and then after fifth hour I have another one. There's usually a bunch of us go up to the washrooms and there's always someone who's willing to stand watch for the teachers.

Smoking in the School

Because the school stands alone as the only major public agency consistently opposed to smoking and enforcing the "no smoking" law for adolescents, it was difficult to study the actual smoking act within the school. The more militant the school was in enforcing its prohibitions of smoking, the more secretive was the act of smoking.

Despite efforts to constrain the smokers, subjects and other informants reported that smoking took place in the locker rooms, shower rooms, industrial arts shop, photographic dark room, and even the classrooms. However, the most generally used areas for smoking in the school were the washrooms and a particular spot adjacent to the school entrance but hidden from view by four small trees.

Because both these locations were essentially within range of easy scrutiny by the faculty, numerous techniques were utilized to foil detection. The majority of the smoking in the school building was done during the lunch hour, and between class periods. During lunch, students were restricted to an area including the cafeteria, the hallways immediately adjacent to it, and the boys' and girls' washrooms, which were the centers for smoking activity. Because this location was heavily traveled by faculty going to and from lunch, smoking required a well-coordinated team effort. To further complicate the matter for the smokers, two counselors were assigned to patrol this general area.

Those concerned about being caught posted "guards" outside the washroom to warn of approaching faculty members. Methods utilized by the "guards" to convey their warnings varied with the urgency of the situation. The simplest method was for the "guard" to go inside and tell the smokers that someone was approaching. However, this endangered the "guard" as he then ran the risk of being caught in the smoking setting. Another procedure employed by the "guards" was simply to kick the door with his heel to warn of the approaching faculty member. Another variation of this procedure was to kick the radiator pipe which passed through the wall. On occasions when a teacher approached too rapidly, or was unnoticed until the last moment, the student on guard opened the door for the teacher and greeted him by name in a loud voice so that those inside would get the message. Non-smokers often acted as guards and it was reported that it was safer to have a non-smoker standing watch. They were less likely to leave their posts for a few puffs with the rest of the group.

Inside the washroom the smokers took additional precautions to avoid being caught. It was a common practice to stand close to urinals, sinks, or toilet stools while smoking, so that cigarettes could be disposed of easily. A wet paper towel was often kept ready as a last resort to snuff out the cigarette should a teacher enter. Smokers would often stand on the toilet stools which enabled them to exhale smoke close to the air exhaust ducts on the wall. This cleared the smoke from the room and also provided for easy disposal of cigarette butts by flushing them down the toilet.

While it was not possible to observe the smoking behavior of the girls as closely as that of the boys, informants reported on similar practices in the washrooms. However, fewer girls smoked and the necessity for an elaborate warning system was less important. While as many as fifteen boys might congregate to smoke cigarettes at any one time, it was unusual for more than five girls to be present in a smoking situation. Girls were more likely to smoke alone or with one or two classmates. They were more apt to smoke when the washroom was empty or they avoided smoking in school altogether. These protective measures were used in all washrooms.

Smoking outside the school building, but on the school grounds, was less hazardous. Here it was common for boys and girls to smoke together as a part of a boy-girl group. The most popular location was adjacent to the front entrance of the school, behind the group of small trees. Here there was less need for a "guard" as participants could see approaching faculty members. Occasionally, however, "guards" were used, especially in the winter months when fewer students were outside and the smokers were more conspicuous. In this situation the watchman would stand on the entrance steps so he could be seen by the smokers and at the same time maintain a watch on the front doors. An elaboration of this system was to have another person stand inside the front doors to watch the halls. They would pass any necessary warning to the student on the steps who in turn relayed it onto the smokers. Students also knew that in the winter it was difficult to tell if a person were exhaling smoke or whether it was just breath condensation. In this setting many smokers took no precautions.

Although this guard system was common, there was a variety of informal warning procedures. Fellow students, not necessarily smokers, would warn the smokers of impending danger, occasionally even going out of their way to do so.

Both inside and outside the school, cigarettes were easily shared among the participants. Occasionally a lighted cigarette was passed to a number of smokers in turn. Two variations of this chain consumption of one cigarette are worthy of note.

A common practice by one group of girls was to smoke while seated on or near the front steps of the school. Here they were partly hidden by an ornamental concrete ledge with only the shoulders and heads visible from the entrance. One smoker would light a cigarette, lean forward so that she was not visible by anyone inside the school entrance and, "take her drag," exhale, and sit up. She would pass the cigarette on to the next girl and the procedure would be repeated. Occasionally one of the participants would glance over her shoulder to check on anyone that might be approaching.

A variation of this pattern observed among a group of four boys was more mobile in nature. One smoker lit a cigarette and, with his back turned, took "his drag", placed the cigarette on a ledge and wandered away. The second participant approached and in a similar manner took his puff, placing the lighted cigarette back on the ledge for the next smoker. The four rotated slowly in this manner until the cigarette was finished. This whole act was conducted amidst other young people going their own way while waiting for the lunch hour to conclude.

Although smoking was not uncommon, far fewer students carried cigarettes on their person than actually smoked. It was common for a smoker to carry one or two in a pocket, purse, or tucked away in a sock; but to carry a pack increased the risk of being caught. A common practice was to leave the pack in the school locker or at home and carry just enough cigarettes for the day's needs. Sharing among fellow smokers was not unusual, and if a smoker ran out he could always "bum one off a friend."

In short, the smoking act was highly formalized; indeed it was almost ritualized. Smokers and non-smokers knew of its patterns and often non-smokers assisted the smokers in avoiding detection by the teacher. Smoking had a special meaning to non-smokers. One illustrated this point when he said:

> You know, I get a kick out of it every time I see a kid smoke and get away with it. It seems there are still a few things around here that you can still do and get away with. It's good to know we can still beat the teachers.

Influences of Smoking on Students' Social Status

The remaining three aspects of this phase of the study were direct attempts to support or refute hypothetical statements developed from the findings of previous research.

"Smoking behavior depends on the individual's social status level within the school."

All social groups appear to have some type of internal hierarchal status system. The school superimposed its own organization on the students. However, regardless of the organizational pattern imposed by the school, an independent status system existed among the students. In some ways it reflected the school's organizational patterns and in others it reflected the socio-economic status system of the larger society. But in still other ways, this structure bore little resemblance to that of the school or the larger society. It was this latter status system that appeared to be most meaningful to the subjects.

All subjects described a distinct student status system, and the majority described a three-level arrangement. The descriptions of these different levels varied with the subject doing the describing. In general, however, the students who constituted the upper level or the "popular group" were characterized as well dressed, well behaved, and generally conforming in nature.

Below this "popular group" was a group that did not have any common title. This group existed by virtue of the fact that it was between the two more easily described extremes of the social status system. Accordingly, this middle group was diverse in nature, made up of "the kids who get the best grades," "the average kids," "the quiet kids." In fact, this group consisted of the majority of students in the school.

On the bottom of the social status system were the "hoods." All non-hoods were able to describe them in detail. They were the students who disrupted the school's organization, caused trouble, were involved in fights and petty crimes and tended to come from particular neighborhoods.

While most agreed that the "hoods" smoked the most, there was a general concensus that

it was the popular group who smoked the next largest amount. The middle group was known for the fact that it was not involved in undesirable behavior. Smoking for the "hoods" appeared to be more a part of the normal day's events than it was for the popular group. "Hoods" often smoked openly at home with their parents' approval, or perhaps their parents had given up expressing their disapproval. They smoked in their neighborhood, on the bus coming to school, and across the street from the school before classes began in the morning. They were apt to "take a few drags" in the washroom between classes or outside during lunch hour. They were, in fact, overt smokers who modified their smoking behavior only during school hours.

The "popular group", on the other hand, was rarely seen smoking. They customarily restricted their smoking to areas away from the school, or if they did smoke in school, took considerable precautions to avoid getting caught.

To investigate the relationship between smoking and peer social status, a procedure was developed whereby each subject was classified as to social status by every other subject; the resulting scores allowed all subjects to be ranked according to social class, as perceived by their peers. This procedure is reported more fully elsewhere.[3]

Two by two tables were developed by dividing both groups, boys and girls, at the median of their respective peer social status scores, and the chi-square test was conducted. In each case the chi-square test was adjusted by Yates Correction.[4] The data are presented in Table 18. The chi-square test indicated that for the females there was a significant difference ($X^2 < .01$) between peer social status and cigarette smoking. Those who were placed on the lower end of the peer social status scale by their peers tended to be cigarette smokers while those placed on the higher end tended to be non-smokers (Table 18 section A). The relationship was similar for boys but not significant.

For the girls, smoking appeared to be an important criterion in peer social status. Only girls from the lower end of the peer social status scale smoked, although almost all girls admitted having tried smoking. For the boys smoking was found at all levels of the status system. In the eyes of the students, a double standard existed. Both boys and girls thought it unacceptable for popular girls to smoke, but smoking was acceptable among the boys at all social levels.

TABLE 18

SOCIAL STATUS SCORES AND SMOKING BEHAVIOR

	Males		Females	
	Smokers	Non-Smokers	Smokers	Non-Smokers
A: Peer Social Status				
Above Median	7.25	12.75	5.00	15.00
Below Median	12.75	7.25	15.00	5.00
Median	2.025		2.10	
Chi-Square	2.024		8.100	
P	$< .20$		$< .01$	

Exploration of Influences of the Peer Group on Smoking Incidence

"Smoking behavior depends on the individual's peer group membership."

In the present study, peer group membership was determined by asking all ninth grade students to answer two sociometric questions: "Who are your five best friends?" and "Who are the five people you spend the most time with?" Each question asked for five names.[1] The responses to the question, "Who are your five best friends?" are shown in Table 19 section A. These results showed a significant difference in the smoking habits of best

friends for both males and females. In both cases, smokers tended to choose smokers and non-smokers chose non-smokers. This difference was most pronounced among the females, with non-smokers failing to pick any smokers.

The smoking patterns of mutual choices, based on the same question, were similar (Table 19 section B). Not only did smokers and non-smokers show a significant trend to select like smoking types, but those who reciprocated the selection, the mutual choices, also tended to be of like smoking types.

Table 19 sections C and D shows the responses to the question, "Who are the five people you spend the most time with?" Best friends and mutual choices again indicated a significant preference for persons of similar smoking habits. Both male and female smokers chose a significantly greater number of smokers than non-smokers. Similarly, non-smokers spent their free time with more non-smokers. As with the previous question, female non-smokers did not choose any smokers. Smoking behavior appeared to be a very important determinant in friendship selection for the girls.

TABLE 19

SMOKING AMONG PEER GROUPS

	Boys		Girls	
Choices By	Smokers	Non-Smokers	Smokers	Non-Smokers
(Who are your five best friends?)				
A: Best friends				
Smokers	63.00	31.00	48.00	35.00
Non-Smokers	20.00	65.00	0.00	96.00
Chi-Square	30.29		73.433	
P	<.001		<.001	
B: Mutual choices				
Smokers	27.00	8.00	20.00	7.00
Non-Smokers	8.00	26.00	0.00	40.00
Chi-Square	17.744		38.772	
P	<.001		<.001	
(Who are the five people you spend the most time with?)				
C: Best friends				
Smokers	63.00	19.00	57.00	18.00
Non-Smokers	20.00	61.00	0.00	82.00
Chi-Square	42.249		94.586	
P	<.001		<.001	
D: Mutual choices				
Smokers	18.00	9.00	17.00	8.00
Non-Smokers	8.00	16.00	0.00	32.00
Chi-Square	4.393		27.844	
P	<.001		<.001	

Exploration of the Perceived Expectations of Smokers and Non-Smokers

"Smoking behavior is related to the extent to which individuals succeed in meeting their personal expectations and the expectations of their parents, peers and school."

Subjects established the upper limit of this scale with their perceptions of what others expected of them. Subjects then indicated where they were on the scale. Points on the scale were assigned values and smokers and non-smokers compared. A detailed description of this technique can be found elsewhere.[4]

Subjects perceived the expectations of their parents in four main ways. They were expected "to get good grades;" be "obedient, polite and well behaved;" "pick nice kids for friends;" and "stay out of trouble."

Both male and female smokers were significantly lower on the scale than were their non-smoking classmates (Table 20). Smokers did not feel they came as close to meeting their parents' expectations as did non-smokers.

TABLE 20

SELF ANCHORING EXPECTATION SCALE SCORES AND SMOKING BEHAVIOR

	Boys		Girls	
	Smokers	Non-Smokers	Smokers	Non-Smokers
A: Parental Expectations				
Above Median	6.14	13.86	3.73	16.27
Below Median	13.86	6.14	16.27	3.73
Median	6.21		6.77	
Chi-Square	4.500		13.310	
P	$<.05$		$<.01$	
B: School Expectations				
Above Median	4.00	16.00	4.86	15.14
Below Median	16.00	4.00	15.14	4.86
Median	5.90		6.04	
Chi-Square	9.120		8.590	
P	$<.01$		$<.01$	
C: Friends' Expectations				
Above Median	11.50	8.50	9.50	10.50
Below Median	8.50	11.50	10.50	9.50
Median	6.95		8.08	
Chi-Square	.400		0.00	
P	$<.90$		<1.0	
D: Personal Expectations				
Above Median	8.00	12.00	10.00	10.00
Below Median	12.00	8.00	10.00	10.00
Median	6.5		6.67	
Chi-Square	.900		0.00	
P	$<.40$		<1.0	

The majority of subjects said the school's major expectation was for the students to "obey the rules and not cause trouble" (Table 20 section B). Again, male and female

smokers both saw themselves as not measuring up to the school's expectations.

The expectations of peers, or friends, were divided into two distinct categories. These categories were "going with the crowd and doing things together," "being honest, cooperative and loyal." Smokers and non-smokers failed to show any significant differences for either male or female groups (Table 20 section C).

There was no consistent pattern in the personal expectations. While male and female smokers' scores varied more than non-smokers', neither showed a significant difference in the achievement of expectations (Table 20 section D).

This characteristic of smokers to feel that they were not meeting their parents' or their school's expectations could be a source of emotional disorder. The act of smoking may be a form of compensation providing a feeling of achievement and needed recognition. It should be remembered that the subjects established the high end of this scale in terms of their own perceptions of expectations. Therefore, smokers are fully aware of the fact that they are not measuring up to either their parents' or their school's expectations.

Summary

A nine-month participant observation study was conducted to explore the social dynamics of cigarette smoking among a group of ninth grade students. During this time 450 structured interviews supplemented the collection of observational data.

Results indicated that smoking was not the isolated act of individuals but was rather a significant factor in the social system of the school, influencing smokers as well as non-smokers. In many cases smoking appeared to be a ploy in the game of outsmarting the teachers. The payoff was to succeed in not getting caught. This brought approval from one's peers.

In addition, smoking and the school's anti-smoking rules were clear cases of the institution's hypocrisy. Teachers were permitted to smoke while the students were informed that they could not smoke. The common rationale for this rule was consideration of the health factors involved. But the students reasoned, that if it is unhealthy for students, isn't it also unhealthy for teachers?

The close relationship of cigarette smoking to such social factors as status, peer groupings, and perceived expectations illustrated the complexity of the task of reducing smoking via educational means. As such, this phase of the study contributed directly to the development of educational strategies.

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CHAPTER V

THE EFFECT OF THE TEACHER AND THREE DIFFERENT CLASSROOM APPROACHES ON SEVENTH GRADE STUDENTS' KNOWLEDGE, ATTITUDES, AND BELIEFS ABOUT SMOKING

Robert P. Irwin

The relationship of cigarette smoking to certain chronic diseases has been well documented in Public Health Service reports.[10] This premise, that cigarette smoking is hazardous to health, was accepted and is a basis of this study. As of now, efforts to develop effective means of treatment or prevention of the chronic disease conditions associated with cigarette smoking through such methods as prohibition or environmental change have been relatively unsuccessful. The difficulty arises from the fact that the prime underlying causes for initiating and continuing cigarette smoking are related to human behavior rather than to some infections or nutritional entity. As a result, a change in human behavior becomes a necessary intermediate objective if the prevention and control of diseases associated with cigarette smoking are to be achieved. The shift in behavior sought in this study was from the "pre-smoker" or "smoking experimenter" behavior toward the "non-smoker" behavior rather than toward the "smoker" behavior.

The Development of the Experimental Teaching-Learning Guides

To facilitate the introduction of a formal program for educating youth concerning the importance of non-smoking behavior, realistic answers had to be offered to the questions of when, what, and how such instruction should take place.

The earlier findings of the University of Illinois Anti-Smoking Education Study,[2] suggested that the seventh grade level was the most effective time when an intensive educational program could truly be preventive. Results of the Illinois survey indicated that the eighth grade level represented a critical point in the cigarette smoking experience for all students. It would appear that this is the period wherein the student decides either to reject cigarette smoking or to move to habitual smoking.

The decision as to what should be included in the experimental teaching unit was based on the use of the concept approach as employed in many curriculum studies and particularly as formulated in the School Health Education Study[9] and in the report Health Concepts: Guides for Health Instruction.[1] The elements of this unit were developed from the general conceptual statement, "The Cigarette Smoking Habit is a Health Hazard of Sufficient Importance for Youth to Resist the Pressure to Smoke." Based upon this idea five related sub-concepts were formulated from which the specific objectives, the content, and the learning activities were developed. These five central ideas or sub-concepts were arranged into a five lesson sequence for the teaching experiment.

The decisions as to how these lessons were to be taught was guided by findings from a series of related studies,[3] and by application of the principles identified in the health behavior studies of Hochbaum,[5] Rosenstock[8] and others. The sequence of lessons was arranged according to the steps outlined in Horn and Waingrow's[6] behavior change model. These steps are as follows:

(a) An awareness of the threat
(b) The acceptance of the importance of the threat
(c) The relevance of the threat
(d) The susceptibility of the threat to intervention.

An effort was made to write the objectives for each of the five lessons in a manner that would communicate clearly the expected student behavior and the content to be learned.

Experimental Procedures

A premise of this study held that a classroom situation carefully designed in terms of organization of subject matter, selection of teaching materials, and optimal utilization of teaching techniques would provide a basis for the most effective teaching-learning experience. Moreover, it was held that such an approach would result in the desired educational changes in terms of knowledge, attitude and belief about cigarette smoking. In order to evaluate such a program, a pilot study was conducted using the five lesson unit on smoking education. This experiment was designed to test the effects of three different educational approaches and the effects of teacher training on the smoking education of seventh grade students.

Each of the approaches employed the same curriculum materials and sequence of lessons. This was done in order to hold constant the influence of the materials in each of the experimental groups while varying the educational approaches. The intent of the study design was to develop three approaches: the individual, the peer-led, and the teacher-led; use them in the classroom situation; and measure their effect upon the knowledge, attitude, and beliefs of the students.

The educational effect of the Individual Approach was dependent upon the student's own study and interpretation of the curriculum materials. Any contact with the teacher had to be student initiated. The students assigned to the Peer-Led Approach studied the same materials but presumably were also affected by the class discussions with their peers. Finally, the Teacher-Led Approach utilized the combined effect of the materials, individual study, peer group discussion, and the teacher's skill in an attempt to achieve the maximum educational effects.

The other major aspect of the study, teacher preparation, was evaluated by comparing the effectiveness of the regular classroom teacher with that of incoming teacher (a member of the study team) who had been trained in smoking education.

The experiment, including the pre- and posttesting with the Attitude-Belief Scale[4] and Smoking Knowledge Test[7] (See Appendix E for test instruments), was conducted over a six week period in October and November of 1968.

The subjects for this study included the 575 seventh grade students in four junior high schools who had completed all of the test measures used in the experiment. They represented a mix of youngsters from both the urban and rural communities of Winnebago County, which is located on the Wisconsin border of northern Illinois. Both the regular classroom teacher and the trained teacher employed each of the three educational approaches. The five lesson unit was inserted into the daily schedule at the time normally reserved for either science or physical education classes depending upon the routines of that particular school. This was done in an attempt to conduct the experiment in the usual or natural school environment. Only one of the six possible treatments or approaches was used in each classroom. The number in each class ranged from a low of 19 to a high of 71 students.

A 2 x 3 factorial design (Figure 3) with a multivariate analysis of covariance for unequal cells was employed. Such a design was necessary in order to test for the possible existence of certain interrelationships between two or more of the experimental variables. The Newman-Keuls technique[11] was used to determine the significant effects of the experiment.

Study Results

In general the curriculum materials were favorably received by both teachers and students. The experiment was considered to be a positive experience even when problems were encountered. In comparing the three approaches, it would appear that no single type was favored by all of the teachers. The Teacher-Led Approach appeared to be most effective in the smaller size class. The effectiveness of the Individual Study Approach seemed to depend to a large extent upon whether this was the accustomed mode of work for a particular class.

There was a marked change in the students' attitude-belief scores which was reflected by the approximate 130 percent gain in the grand mean test score (see Appendix D, Figure 4). However, the increases in student knowledge test scores were much smaller, with an approximate 15 percent increase (see Appendix D, Figure 5).

The attitude-belief scores showing the differences in the pre- to posttest gains for the various experimental groups are summarized in Table 21. In this regard, Table 22 shows the significant differences revealed from the analysis of the various experimental

FIGURE 3

FACTORIAL DESIGN FOR THE CLASSROOM EXPERIMENT IN SMOKING EDUCATION

A. TEACHER FACTORS	B. APPROACH FACTORS: Teacher-Led — Maximize the interaction of students and teachers		Peer-Led — Maximize the interaction of students		Individual Study	
Teacher Trained in Smoking Education	TT Teacher-Led		TT Peer-Led		TT Individual	
	1	2	3	4	5	6
Regular Teacher (not trained in Smoking Education)	RT Teacher-Led		RT Peer-Led		RT Individual	
	7	8	9	10	11	12

Curriculum materials and lesson sequence were the same for all approaches

TT = Trained Teacher

RT = Regular Teacher

Each cell subdivided for analysis by sex: odd numbers - male
even numbers - female

group scores on the attitude-belief scale. As shown in this table, there were significant differences in five of the seven effects examined in the study. Accordingly, students taught by regular teachers achieved higher attitude belief scores than did the students taught by the trained teachers. When the educational approaches were tested the Individual Study classes scored higher than did the Peer-Led classes. When scores were analyzed by sex it was found that girls achieved significantly higher scores than did the boys.

The results of the interaction analysis which tested the effects of two or more of the experimental variables on student attitudes and beliefs are also presented in Table 22. (see A x B Teacher by Approach, A x C Teacher by Sex, B x C Approaches by Sex, and A x B x C The three way interaction of Teachers by Approach and by Sex of student).

Students taught by Regular Teachers with the Teacher-Led Approach had higher attitude-belief scores than did the students who were taught by Trained Teachers using either the Teacher-Led or Peer-Led Approaches. The interaction of approaches by sex showed that the Individual Study Approach produced higher scores with boys and girls when compared to the Peer-Led Approach with boys. Also, Peer-Led and Teacher-Led girls achieved significantly higher scores than did the Peer-Led boys. Finally in regard to the attitude-belief score results, the Individual Study Approach produced better results with girls than did the Teacher-Led Approach with boys.

No significant differences resulted from the interactions of teachers and sex of student or from the three way interactions of teachers, approaches and sex of student.

Data from the same type of analysis on the knowledge test scores are shown in Tables 23 and 24. Examination of the adjusted mean score results in Table 24 shows that there were no significant differences for two of the three main effects tested. There were no differences between the classes taught by regular teachers and trained teachers, nor were there any significant differences in student scores by sex.

TABLE 21

MEAN RESULTS OF ATTITUDE-BELIEF ANALYSIS AND SIGNIFICANCE

	n	Pre-test	Post-test	Pre-Post Diff.	Adj.* Post-Test
A Teacher (over approaches and sex)					
Trained	292	55.4	119.0	63.6	119.3
Regular	283	49.2	122.6	73.4	124.7
B Approach (over teachers and sex)					
Teacher-led	194	55.8	113.4	57.6	121.0
Peer-led	180	55.2	124.1	68.9	119.4
Individual	201	48.7	125.4	76.7	124.4
C Sex (over teachers and approaches)					
Boys	281	56.8	115.4	57.6	119.4
Girls	294	49.7	126.3	76.6	124.7

A x B Teacher by Approach (over sex)

Approach	Teacher Trnd Pre-	Post-	Regular Pre-	Post-	Adjusted Means Trnd.	Reg.
Teacher-led	56.1	113.7	55.6	113.2	114.1	126.1
Peer-led	60.1	121.4	48.0	128.0	118.6	120.7
Individual	49.9	121.7	47.5	129.2	124.4	126.1

A x C Teacher by Sex (over approaches)

Sex						
Boys	57.9	116.9	54.5	112.4	118.2	121.8
Girls	51.0	123.6	48.9	127.8	121.2	126.2

B x C Approaches by Sex (over teachers)

Approach	Sex Boys Pre-	Post-	Girls Pre-	Post-	Adjusted Means Boys Post-	Girls Post-
Teacher-led	54.7	109.3	56.8	117.2	119.6	122.2
Peer-led	62.5	119.0	47.6	129.3	115.1	124.0
Individual	53.3	117.6	44.5	132.6	123.4	126.9

A x B x C Teachers by Approaches by Sex

The data from this three way interaction analysis could not be represented in this form. Also, there were no significant differences shown from this analysis.

*The adjusted posttest means were calculated during the analysis of covariance treatment. The pretest results were the covariate for the adjustment of the criterion posttest results.

TABLE 22

SIGNIFICANT DIFFERENCES IN STUDENTS ADJUSTED MEAN SCORES (ATTITUDE-BELIEF) FOR THE VARIOUS TREATMENT GROUPS

I.	Main Effects on Students Scores				
	A	Teacher			
		Regular	124.7	> Trained Teacher	119.3
	B	Classroom Approaches			
		Independent Study	124.4	> Peer-Led	119.4
	C	Sex			
		Girls	124.7	> Boys	119.4
II.	Interaction Effects on Student Scores				
	A x B	Between Teachers and Classroom Approaches			
		RT x Teacher-Led	126.1	> TT x Teacher-Led	114.1
				TT x Peer-Led	118.6
		RT x Peer-Led	120.7	> TT x Teacher-Led	114.1
		RT x Individual Study	126.1	> TT x Teacher-Led	114.1
				TT x Peer-Led	118.6
		TT x Individual Study	124.4	> TT x Teacher-Led	114.1
	A x C	Between Teacher and Sex of Student			
		No significant differences were revealed from this analysis			
	B x C	Between Classroom Approaches and Sex of Student			
		Individual Study x Girls	126.9		
		Individual Study x Boys	123.4	> Peer-Led x Boys	118.1
		Peer-Led x Girls	124.0		
		Teacher-Led x Girls	122.2		
	A x B x C	By Teacher-Classroom Approaches-Sex of Student			
		No significant differences were revealed from this analysis			

RT = Regular Teacher

TT = Trained Teacher (Trained in Smoking Education)

> = is greater than

TABLE 23

MEAN RESULTS OF KNOWLEDGE TEST ANALYSIS AND SIGNIFICANCE

	n	Pre-test	Post test	Pre-Post Diff.	Adj.* Post-Test
A Teacher (over approaches and sex)					
Trained	292	16.6	19.7	3.1	19.4
Regular	283	16.4	19.1	2.7	19.0
B Approaches (over teachers and sex)					
Teacher-led	194	15.7	18.7	3.0	19.2
Peer-led	180	16.6	18.5	1.9	18.3
Individual	201	17.3	20.8	3.5	20.0
C Sex (over teachers and approaches)					
Boys	281	16.0	18.9	2.9	19.2
Girls	294	17.1	19.8	2.7	19.2

A x B Teacher by Approach (over sex)

Approach	Teacher Trnd Pre-	Post-	Regular Pre-	Post-	Adjusted Means Trnd.	Reg.
Teacher-led	15.3	18.4	16.0	19.0	19.2	19.2
Peer-led	16.5	18.6	16.8	18.4	18.4	18.0
Individual	17.9	21.9	16.7	19.6	20.7	19.3

A x C Teacher by Sex (over approaches)

Sex						
Boys	16.5	19.6	15.0	17.6	19.5	18.5
Girls	16.9	19.8	17.2	19.9	19.3	19.2

B x C Approaches by Sex (over teachers)

Approach	Sex Boys Pre-	Post-	Girls Pre-	Post-	Adjusted Means Boys Post-	Girls Post-
Teacher-led	14.9	18.2	17.7	19.7	19.4	19.1
Peer-led	16.4	19.2	17.4	21.0	18.0	18.6
Individual	15.6	17.4	17.2	20.6	20.1	19.9

A x B x C Teachers by Approaches by Sex

The data from this three way interaction analysis could not be represented in this form.

*The adjusted posttest means were calculated during the analysis of covariance treatment.

TABLE 24

SIGNIFICANT DIFFERENCES IN STUDENTS ADJUSTED MEAN SCORES (KNOWLEDGE) FOR THE VARIOUS TREATMENT GROUPS

I. Main Effects on Students Scores

A Teacher

No significant differences were revealed from this analysis

B Classroom Approaches

Individual Study	20.0	> Peer-Led	18.2
Teacher-Led	19.2		

C Sex

No significant differences were revealed from this analysis

II. Interaction Effects on Student Scores

A x B Between Teachers and Classroom Approaches

No significant differences were revealed from this analysis

A x C Between Teachers and Sex of Student

No significant differences were revealed from this analysis

B x C Between Classroom Approaches and Sex of Student

No significant differences were revealed from this analysis

A x B x C By Teacher-Classroom Approaches-Sex of Student

All of the Experimental Conditions Teacher x Approach x Sex		> RT x Peer-Led x Boys	15.6
TT x Individual Study x Girls	20.4	> TT x Peer-Led x Boys	18.2
		TT x Peer-Led x Girls	18.3
TT x Individual Study x Boys	20.8	> TT x Peer-Led x Boys	18.2
		TT x Teacher-Led x Girls	18.7
		RT x Peer-Led x Girls	18.3
		RT x Individual Study x Boys	18.4

> = is greater than

However, when the data were analyzed by approach, it was found that classes taught by both the Independent Study and Teacher-Led Approaches achieved significantly higher knowledge test scores than did the classes taught by the Peer-Led Approach. Continuing with Knowledge Test analysis, an examination of the interaction effects revealed that there were no significant differences or effects on student scores in two of the three interactions studied. No significant relationship was found to exist between teachers and approaches, nor was there a significant relationship between teacher and sex of student on Knowledge Test scores.

When the three way interactions of Teacher, Approach, and Sex were tested, the results showed that all experimental groupings scored significantly higher than did the boys who were taught by the Regular Teachers using the Peer-Led Approach. Other significant differences in knowledge scores revealed that the three way interactions of Trained Teachers-Individual Study-Boys and Trained Teacher-Individual Study-Girls achieved higher scores than did the Trained Teachers-Peer-Led-Boys. Also the Trained Teacher-Individual Study-Boys scored significantly higher than did the Regular Teacher-Peer-Led-Girls.

Conclusions

Based on the findings of this study the following conclusions are presented:

1. The five lesson experimental unit had a strong positive influence on the students' attitudes and beliefs about smoking. This effect is noted in the increase of approximately 130 percent on the attitude-belief scores from the pre- to posttest scores.

2. With regard to the teacher effect, the special classroom climate and rapport of the Regular Teacher appears to be of considerable importance in smoking education. This teacher advantage would appear to more than offset any benefit gained from the greater knowledge of an outside specialist teacher.

3. The success of the Individual Study Approach seems to confirm the need to avoid the school's traditional authoritarian and disciplinary role with regard to cigarette smoking. The usual school authority, as represented by the teacher, was minimized in this approach. The elimination of student punishment for smoking would seem to provide the supportive environment recommended by Newman[3] which is believed to be an essential condition for producing educational change.

4. The interaction of teacher, approach, and sex of the student in the teaching process produced different results for the attitude-belief change than for the knowledge gain. It appeared that the educational processes that changed attitudes and beliefs were different from those that produced favorable knowledge changes.

Comments on Conclusions

In essence, the findings of the experiment seemed to indicate that the Individual Study Approach produced superior results in terms of desired changes of attitude, belief, and knowledge about smoking. This relationship between educational approach and student performance was generally consistent for both the Regular Teachers and the Trained Teachers.

However, the implication that student success in the Individual Study Approach was due to the fact that teachers were less prominent in this approach seems questionable. While there might have been a lesser degree of teacher involvement, the Individual Study should not be construed as being synonymous with the independent study. The approach was designed for the individual student but did not restrict him to independent study. In fact, the students in this approach were given study materials and prescribed learning activities to be completed individually and were encouraged to use the resources available to them. They did, in fact, discuss their assignments with other students and with their teachers. What appears to be an equally plausible explanation for the success of this treatment group might well be the contention that this approach represented the ideal situation of learning. It could be described as the individualizing of instruction wherein the student was given

maximum freedom, access to study materials, and the encouragement to seek assistance when needed.

The regular classroom teacher appears to show a clear advantage over the outside specialist teacher in bringing about the desired changes in students' attitudes and beliefs about smoking. However, there appeared to be no such relationship between teachers and student performance in terms of knowledge test scores. The lack of consistency in these results also seems to support the contention that the educational processes involved in attitude-belief change are different from those concerning knowledge change.

Finally, the full impact of an educational experience such as this probably cannot be assessed without conducting a follow-up study.

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CHAPTER VI

CONCOMITANT CHANGES IN YOUTH SMOKING BEHAVIOR

Joseph A. Laoye and Donald B. Stone

The third major survey of the population of the University of Illinois Anti-Smoking Education Study was completed in October, 1968. It was projected that data thus obtained would make possible an analysis of the smoking behavior changes which had occurred over a two-year period. This continuing series of surveys of a particular youth population represents a unique contribution of the Illinois project to smoking research. It is the only such study on youth smoking which has followed a particular population over an extended period of time. It was hoped that data obtained from these surveys might aid in discerning long range trends in youth smoking behavior and point out possible variations in effectiveness of different educational approaches.

A study, Concomitant Changes in Youth Smoking Behavior, utilizing the prospective survey method, involved the population self-identified in 1966 as regular and occasional smokers. The first purpose of the study was to identify any changes of status among those selected youths who identified themselves as regular and occasional smokers in the initial survey. Second, the study attempted to ascertain the sociological, demographic, attitudinal, and belief factors associated with changes in youth smoking behavior. Third, these factors were then further analyzed on the basis of sex and grade level differences.

Problems Investigated in the Study

The specific research problems investigated in this study were as follows:

1. What smoking behavior changes occurred among the subjects of the study sample in relation to the proportion of
   (a) regular smokers who continued as regular smokers, changed to occasional smokers or quit smoking; and
   (b) occasional smokers who continued as occasional smokers, changed to regular smokers, or quit smoking?
2. Were there differences in the smoking behavior changes among the study sample by grade and by sex?
3. Were there differences among the three smoking behavior groups with respect to
   (a) sociological and demographic factors, and
   (b) attitude and belief characteristics?
4. Did the findings of this study support the results of earlier research conducted by the Illinois study team with respect to
   (a) student educational aspirations,
   (b) parental education,
   (c) parental smoking behavior,
   (d) athletic participation,
   (e) extra-curricular activities participation,
   (f) community activities participation,

(g) influence of Surgeon General's Report, and
(h) influence of cigarette label warning?

Selection of Subjects

To be included in the study it was necessary for the student to have

(1) been identified as a regular or occasional smoker in 1966,

(2) been included in the surveys of 1966 and 1968,

(3) completed data on the criterion question of smoking behavior in 1966 and 1968, and

(4) completed Parts I and III (socio-demographic) and Part IV (attitude-belief) section of the survey forms.

A total of 1,205 students met the criteria for inclusion in the study.

The Survey Instrument

The questionnaire and attitude scale used by Horn in the Portland study served as a basis for the survey instrument developed by the University of Illinois Anti-Smoking Education Study team. The same procedures were employed in the administering of the 1968 surveys as in the earlier surveys conducted by the study team.

The instrument consisted of a total of 88 items, including 44 questionnaire and 44 attitude-belief scale items. The survey instrument was arranged in four parts:

Part I to be completed by all the respondents,

Part II to be completed by non-smokers only (not in the realm of this study),

Part III to be completed by smokers only, and

Part IV, the attitude-belief item portion, to be completed by all students.

The participants in this particular study completed Parts I, III, and IV of the survey instrument. Part I consisted of twenty-one questions which served to elicit descriptive information about the respondents. The student's answers to question 21 classified him as a smoker or a non-smoker. Response 21a or 21b identified the regular and the occasional smokers. Responses 21c, d or e identified the non-smokers, who were therefore beyond the realm of this particular study. The response to item 21 determined whether the individual completed Part II (questions 22-29) for the non-smokers or Part III (questions 30-44) for smokers.

The survey instrument went through several revisions, and before the final format was adopted it was given to approximately 500 students in order to determine its usefulness. Standards considered in evaluating the form included readability, clarity of instruction, and the ability of the attitude items to discriminate the smokers from the non-smokers.

The same survey instrument was given to the respondents in 1968, two years after the first survey. This enabled the investigator to compare the 1966 and 1968 survey responses. Although a total of 2,333 respondents were identified as being either regular or occasional smokers in the two surveys, only 1,205 could be retained according to the criteria established for this study.

Attitude-Belief Items

The attitude-belief instrument was incorporated as Part IV of the University of

Illinois Anti-Smoking Education Survey Form. The instrument consisted of 44 items weighted on a scale of 0 to 4. The 44 items of the scale were weighted in favor of the non-smokers response (see Appendix A).

Procedures Employed in Handling Data

Since the 1966 and 1968 surveys had to be matched, the investigator visually scanned the 1966 computer print-outs of the raw data in order to identify the respondents who marked themselves as regular or occasional smokers. These students were then cross-checked by using the computer print-outs of the 1968 survey data, to determine what changes had taken place in their smoking behavior over the two year period. The population was further delimited to those subjects falling into the following three smoking behavior categories which represented the most distinct types of smoking behavior.

1. Students who were regular smokers in 1966 and remained regular smokers in 1968,

2. Students who were regular smokers in 1966 and changed to ex-smokers (non-smokers in 1968),

3. Students who were occasional smokers in 1966 and changed to regular smokers in 1968.

It was assumed that if the independent variables of sociological, demographic and attitude-belief factors were related to smoking behavior characteristics, these groups should reveal the differences.

The respondents were grouped by grades and sex. The Chi-Square technique was used for further analysis of the nominal data in order to determine more precisely where the relationships existed. This nonparametric statistic was used because random sampling could not be established in the categorization by smoking behavior of the respondents. For the relationship between the categories, contingency co-efficient, as recommended by Dubois,[2] was utilized.

Smoking Behavior Categories

The 1966 survey revealed that of the 1,205 subjects selected for the study 375 were regular smokers and 830 were occasional smokers. At the end of the two year period in 1968, the 1,205 subjects again completed the survey which included the following five categories:

1. Regular smokers,

2. Occasional smokers,

3. Ex-regular smokers,

4. Ex-occasional smokers,

5. Never-smokers.

Regular smokers indicated those individuals who smoked cigarettes just about every day. The Occasional smokers smoked cigarettes once in awhile, but not every day. The Ex-regular smokers used to smoke cigarettes just about every day, but had stopped smoking. The Ex-occasional smokers had smoked cigarettes a few times but had stopped smoking, while the Never-smokers had never smoked cigarettes. Since this study was concerned only with smokers, those students classifying themselves as Never-smokers in the 1968 survey were considered to be Ex-smokers. Accordingly, the following 2 x 3 table was used to classify the changes in smoking behavior that occurred over the two year period. (see Table 25).

TABLE 25

TABLE OF CLASSIFICATIONS FOR SMOKING BEHAVIOR CHANGES

		1966 Survey	
	1968 Survey	(a) Regular	(b) Occasional
a	Regular	a - a	b - a
b	Occasional	a - b	b - b
c	Ex-smokers	a - c	b - c

Key I to Table

a - a = Regular smoker remains a regular smoker
a - b = Regular smoker changes to an occasional smoker
a - c = Regular smoker changes to an ex-smoker (non-smoker)
b - a = Occasional smoker changes to a regular smoker
b - b = Occasional smoker remains an occasional smoker
b - c = Occasional smoker changes to an ex-smoker (non-smoker)

Scoring of the Survey Instrument

The 66 variables of the 88 items of the Survey Form that were assigned weighted values for the purpose of scoring are shown in Appendix A. Fourteen items were selected in Part I, 8 items in Part III, and 44 attitude-belief items in Part IV, totaling 66 items. Each item was scaled to favor a non-smoker and the items were divided into three parts of subsection scores. Thus, possible scores ranged from 0 - 36 for Part I, 0 - 23 for Part III, and 0 - 176 for Part IV, or a total score range of 0 - 235 for the 66 items. These items related information on sociological, demographic, and attitude-belief characteristics.

The scores for each category were calculated using the mean scores and F ratio in order to test for differences between the groups using a one way analysis of variance. In order to locate where the differences actually occurred, Kramer's[3] extension of Duncan's new Multiple Range Test was employed. The smoking behavior changes and associated characteristics were studied in order to determine differences relating to the behavior categories, sex, and grade levels.

The Principal Findings

The descriptive characteristics of 1,205 smokers on the 1966 survey revealed that 36.45 percent of the boys and 23.01 percent of the girls were regular smokers. (see Table 26). This difference or higher rate for boys was statistically significant. (see Appendix C Table 26a). Examination of the rate and distribution of smoking by sex and grade level showed that the four grade levels (seventh through tenth in 1966) were divided into two similar groups. The first two grades (seventh and eighth) included a higher percent of occasional smokers while the ninth and tenth grades had a significantly higher percent of regular smokers. This clear difference in the rate of regular smokers was observed between the eighth and ninth grades. (see Table 26).

Two years later, the 1968 survey of the same 1,205 students revealed that 46.50 percent of the boys and 44.77 percent of the girls were regular smokers. (see Table 27). The

TABLE 26

PERCENTAGE AND FREQUENCY DISTRIBUTION OF SMOKERS
BY GRADE LEVEL AND SEX, 1966 DATA (PRE)

Boys By Grade

	7th		8th		9th		10th		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Regular	46	27.22	48	29.81	91	43.13	80	43.01	265	36.45
Occasional	123	72.78	113	70.19	120	56.87	106	56.99	462	63.55
TOTAL	169	100.00	161	100.00	211	100.00	186	100.00	727	100.00

Girls By Grade

Regular	12	14.29	9	08.91	37	28.91	52	31.52	110	23.01
Occasional	72	85.71	92	91.09	91	71.09	113	68.48	368	76.99
TOTAL	84	100.00	101	100.00	128	100.00	165	100.00	478	100.00

Total By Grade

Regular	58	22.92	57	21.76	128	37.76	132	37.61	375	31.12
Occasional	195	71.08	205	78.24	211	62.24	219	62.39	830	68.88
TOTAL	253	100.00	262	100.00	339	100.00	351	100.00	1205	100.00

TABLE 27

SMOKING BEHAVIOR CHANGE BY GRADE, SEX AND TOTALS
Over the Two Year Period from 1966-1968

7th-9th GRADE

	1966 Regular						1966 Occasional						Totals					
	BOYS		GIRLS		TOTALS		BOYS		GIRLS		TOTALS		BOYS		GIRLS		TOTALS	
1968	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Regular	21	45.65	7	58.33	28	48.27	27	21.95	25	34.72	52	26.67	48	28.40	32	38.09	80	31.62
Occasional	2	4.35	2	16.67	4	6.99	27	21.95	17	23.61	44	22.56	29	17.16	19	22.62	48	18.97
Ex-smoker	23	50.00	3	25.00	26	44.84	69	56.10	30	41.66	99	50.77	92	54.44	33	39.29	125	49.41
TOTALS	46	100.00	12	100.00	58	100.00	123	100.00	72	99.99	195	100.00	169	100.00	84	100.00	253	100.00

8th-10th GRADE

Regular	26	54.17	4	44.44	30	52.63	41	36.28	25	27.17	66	32.20	67	41.61	29	28.71	96	36.64
Occasional	5	10.42	3	33.33	8	14.03	21	18.58	20	21.74	41	20.00	26	16.15	23	22.77	49	18.71
Ex-smoker	17	35.42	2	22.22	19	33.33	51	45.13	47	51.09	98	47.80	68	42.24	49	48.52	117	44.65
TOTALS	48	100.01	9	99.99	57	99.99	113	99.99	92	100.00	205	100.00	161	100.00	101	100.00	262	100.00

9th-11th GRADE

Regular	58	63.74	28	75.67	86	67.19	51	42.50	26	28.57	77	36.49	109	51.66	54	42.18	163	48.08
Occasional	7	7.69	6	16.22	13	10.16	17	14.17	20	21.97	37	17.54	24	11.38	26	20.32	50	14.75
Ex-smoker	26	28.57	3	8.11	29	22.66	52	43.33	45	49.45	97	45.97	78	36.96	48	37.50	126	37.17
TOTALS	91	100.00	37	100.00	128	100.01	120	100.00	91	99.99	211	100.00	211	100.00	128	100.00	339	100.00

10th-12th GRADE

Regular	56	70.00	45	86.54	101	76.51	58	54.72	54	47.79	112	51.14	114	61.29	99	60.00	213	60.68
Occasional	2	2.50	4	7.69	6	4.54	13	12.26	23	20.35	36	16.44	15	8.07	27	16.36	42	11.97
Ex-smoker	22	27.50	3	5.77	25	18.94	35	33.02	36	31.86	71	32.42	57	30.64	39	23.64	96	27.35
TOTALS	80	100.00	52	100.00	132	99.99	106	100.00	113	100.00	219	100.00	186	100.00	165	100.00	351	100.00

TOTALS

Regular	161	60.75	84	76.36	245	65.33	177	38.31	130	35.33	307	36.99	338	46.50	214	44.77	552	45.82
Occasional	16	6.04	15	13.64	31	8.27	78	16.88	80	21.74	158	19.04	94	12.93	95	19.88	189	15.68
Ex-smoker	88	33.21	11	10.00	99	26.40	207	44.81	158	42.93	365	43.98	295	40.57	169	35.35	464	38.60
TOTALS	265	100.00	110	100.00	375	100.00	462	100.00	368	100.00	830	100.01	727	100.00	478	100.00	1205	100.00

occasional smokers group included 12.93 percent of the boys and 19.88 percent of the girls. This survey showed that 40.57 percent of the boys and 35.35 percent of the girls had quit smoking during the two year period. In 1968, there was no difference between the sexes with respect to regular smokers (Boys 46.50 percent, girls 44.77 percent, see Table 27). This fact reflected the greater increase in the proportion of regular smokers among the girls. The tendency toward a higher rate of regular smoking in the upper grade levels or among the older students was again revealed. This finding was particularly apparent in the fact that there was a statistically significant association between regular smoking and higher grade level. (see Appendix C Table 27a).

A comparison of the 1966 and 1968 surveys (Table 27) revealed that among the 375 original regular smokers, the largest percentage remained as regular smokers (65.33 percent). In this group, a higher percentage of the girls (76.36 percent) rather than boys (60.75 percent) remained regular smokers. These data revealed that a very low percent of regular smokers (8.27 percent) changed to occasional smokers. Among the original regular smokers, a higher proportion of the boys than girls quit smoking. (33.21 percent boys versus 10.00 percent girls). The regular smoker had a greater tendency to remain as a regular smoker as he progressed to the upper grades. (see Table 27).

The smoking trends over time showed that occasional smoking is a transitional behavior (Table 27). Occasional smokers tend to quit. The pattern of changing from occasional to regular smokers was similar between the sexes, except in the upper two grades where more boys than girls changed from occasional smokers to regular smokers (Table 27). As presented in Table 27, a rather low percentage of occasional smokers continued in this category. A higher proportion of occasional smokers quit than did regular smokers, irrespective of sex. (43.98 occasional versus 26.40 regular). There seems to be no set pattern among the occasional smokers who quit since both the boys and girls seem to quit in the same proportion. However, the higher the grade level, the lower the percentage of occasional smokers who quit smoking.

The pattern of quitting is related to the rate of smoking, sex, and age as reflected by grades (Table 27). The highest percentage of quitting for all the groups studied was among the seventh to ninth grade boys, both for the regular and occasional smokers (54.44 percent). There was a significant difference in the rate of quitting smoking between the sexes at the seventh-ninth grade period when a higher proportion of the boys than the girls quit (see Table 28).

TABLE 28

SUMMARY OF CHI-SQUARE TEST DATA SHOWING ASSOCIATIONS BETWEEN THE SEXES IN NUMBER OF SMOKERS AND EX-SMOKERS AT THE END OF THE TWO-YEAR PERIOD BY SELECTED GRADES AND BY TOTAL

		SMOKERS		EX-SMOKERS	
GRADE	SEX	1966	1968	1968	CHI-SQUARE
7th-9th	Boys	169	77	92	5.78*
	Girls	84	51	33	
9th-11th	Boys	211	133	78	0.00
	Girls	128	80	48	
10th-12th	Boys	186	129	57	2.08
	Girls	165	126	39	
**TOTALS	Boys	727	432	295	3.29
	Girls	478	309	169	

* Significant at .05 level
** The four grades were combined

The analysis of variance used in testing the smoking behavior categories revealed significant differences on the pretest results of Parts I, III and the total test scores for both boys and girls (see Table 29). The data for the posttest analysis revealed significant differences for both boys and girls in Parts I and III of the survey instrument as well as on the total survey form scores for the girls. There were significant differences between the regular-to-ex-smoker group when compared with the two smoking behavior groups (regular to regular and occasional to regular). There were no significant differences among the three smoking behavior categories on the attitude-belief section (Part IV) of the survey instrument (see Table 29).

TABLE 29

ANALYSIS OF GROUP DIFFERENCES SHOWING PRE & POSTTEST MEAN SCORES AND F RATIOS BY SMOKING BEHAVIOR CATEGORIES AND SEX FOR THE THREE PARTS OF THE SURVEY FORM

BOYS

		PRE				POST			
SMOKING CATEGORIES	N	PART I	PART III	PART IV	TOTAL	PART I	PART III	PART IV	TOTAL
Reg.-Reg.	161	10.08	9.20	79.64	98.92	10.92	8.64	77.44	97.00
Reg.-Ex-Sm.	88	10.16	9.92	76.56	96.64	15.68	----	75.25	-----
Occ.-Reg.	177	13.44	12.40	75.68	101.52	10.50	8.40	78.76	97.66
F Ratio		22.00*	33.67*	2.06	30.48*	38.04*	0.97t	1.48	0.59t

GIRLS

Reg.-Reg.	84	7.98	10.64	80.96	99.58	9.10	8.48	81.40	98.98
Reg.-Ex-Sm.	11	7.56	10.96	78.76	97.28	13.16	----	76.56	-----
Occ.-Reg.	180	11.48	12.40	78.76	102.64	9.52	9.12	81.84	100.48
F Ratio		18.13*	6.52*	0.52	11.27*	5.71*	2.58t**	0.86	3.64t**

* Significant at .05 level
** Scheffé's method significant at .05 level
Scheffé's (t prime) = 2.4

Factors Associated with Smoking

The relationship between smoking and certain other factors reported in the previous University of Illinois studies was examined and compared with the results of this research. Findings from this study, which were consistent with the earlier investigations, are as follows:

1. The educational aspiration for the group that continued to be regular smokers was lower than for the group that quit smoking.

2. The parents' level of education tended to be higher for the regular to ex-smoker group when compared with the regular to regular group.

3. A higher percentage of the students in the regular to regular group had parents who smoked. This is particularly true in relation to fathers who smoked.

4. A comparison of the two smoking behavior groups showed a consistent pattern of participation. The ex-smoker group had a comparatively higher rate of participation in organized athletics, extra-curricular activities and community activities.

5. A higher proportion of the regular to ex-smoker group reported that they had close friends who did not smoke when compared

with the regular to regular group.

6. Knowledge of the Surgeon General's Report on Smoking and Health and cigarette warning labels on cigarette packages had no apparent influence on the smoking behavior of the students.

Other findings related to previous research are as follows:

1. There was evidence of some concern about the possible harmful effects of cigarette smoking even among the two groups who continued smoking.

2. A higher proportion of regular smokers stated that they were likely to be cigarette smokers in five years.

The Null Hypotheses Testing

Examination and discussion of the statistical data analyzed in this study was conducted in order to confirm or reject the null hypotheses.

Null Hypothesis I

There is no difference between the sexes with respect to the rate of regular cigarette smoking.

Considering the 1966 regular smoking rate, there was a significant difference between the sexes, therefore the hypothesis was rejected. When the 1968 regular smoking rate was examined, there was no significant difference between the sexes, and so the hypothesis was accepted.

Null Hypothesis II

Age (as reflected by grade level) has no effect upon the rate of regular cigarette smoking.

When the rate of cigarette smoking for all the grade levels was considered there was no significant difference. However, when the extremes of the distribution were compared (the ninth grade against the twelfth grade), there was a significant difference and so the hypothesis was rejected.

Null Hypothesis III

There is no difference between the sexes with respect to the rate of quitting cigarette smoking.

There was no significant difference in the rate of quitting between the sexes when all the grade levels were combined. However, when the sexes were compared in the seventh-ninth grade level there was a significant difference in the rate of quitting, thus the hypothesis was accepted when all the groups were combined and rejected when considering the seventh-ninth grade level.

Null Hypothesis IV

There are no differences among the three smoking behavior groups (regular to regular, regular to ex-smoker, and occasional to regular) on either the pre- or posttest survey instrument scores that related to demographic, sociological, attitude and belief factors.

Significant differences were found in the pre- and posttest scores for the demographic and sociological parts (Parts I and III of the survey instrument), and there were no significant differences among the three smoking behavior groups on the attitude-belief characteristics (Part IV). Therefore the hypothesis was rejected with respect to Parts I and III and accepted for Part IV.

Interpretation of the Findings

A word of caution - Extra care needs to be taken in the interpretation and extrapolation of the findings of this study, due to the fact that only cigarette smokers were studied. Those students classed as Ex-smokers and Never-smokers on the original survey in 1966 were excluded from this study.

The fact that more occasional smokers quit smoking cigarettes than did the regular smokers was expected. This is based on the belief that occasional smokers are not as psychologically or physiologically dependent as are the regular smokers. Also it may be that some occasional smokers are more correctly characterized as experimenters. Such persons might simply be curious about smoking and once having had the experience of smoking, they quit.

The 1966 data revealed a greater proportion of regular smokers among the boys than the girls; conversely, there were more occasional smokers among the girls than the boys. Since it is the occasional smoker who is more likely to quit smoking than the regular, it might be expected that more girls would quit. However, this was not the case, since more girls became regular smokers in 1968. The reasons for this are not clear. It has been reported that a general belief exists among the girls that smoking helps to prevent weight gain, and therefore weight-conscious girls continue smoking in order to control weight. However, the findings from this study do not seem to support this conclusion, since a higher proportion of those girls who quit smoking reported that they were overweight.

This study revealed that more boy regular smokers quit smoking than did girls. Is it possible that these regularly smoking boys who quit are now substituting some other forms of compensation or are they actually quitting cigarette smoking because of health reasons?

More regular to regular or ardent smokers were reported in the upper two grades of Senior High School (eleventh to twelfth) than for the lower grades. Perhaps more of these older students had part-time employment which provided them with pocket money for cigarettes. Also cigarette vending machines are frequently located in places of employment which makes cigarettes more readily available, and this may be a contributing factor in their smoking.

A higher proportion of the boys in the seventh to ninth grade group quit smoking than did the girls. This could be attributed to the fact that girls mature earlier than boys and continued smoking may be a manifestation of this difference in maturity.

There were no differences in results of Part IV of the survey instrument (attitude-belief section) when the three smoking behavior categories were compared. This result seems to differ from several other studies conducted in the University of Illinois project. Alles,[1] Lindsay,[4] and Schmidt,[5] all found significant attitude-belief score differences in their smoking behavior groupings. The lack of consistent results between this study and the others mentioned could be due to the fact that this study dealt with a narrower spectrum of smoking behavior, (initially only occasional or regular smokers were included). Another factor which may account for the different result was the time dimension. This was a two year prospective study while the others were not. Also it should be borne in mind that attitudes are affected by various forces that in turn may obscure any differences attributable to smoking behavior.

Cigarette smoking is a habit. Habits are strengthened by constant practice. Therefore, since the regular smokers continue this habit of smoking, it might be expected that their rate of smoking would continue to increase. However, the data from this study reveal certain inconsistencies. For example, an unexpected result was the tendency among the girls to show a higher rate of increase in regular smoking and a lower rate of quitting than boys.

A higher proportion of the regular smokers had parents who smoked than did the ex-smokers. The father's influence appeared to be an important factor among the regular smokers regardless of sex. In this study, at least, "Like father like son" and possibly like daughter, seems to be an apt statement. This apparent influence of the father may suggest that the man's role is seen as more appealing than that of the woman's.

A number of studies reviewed indicated that peer group influence is as important as parental influence on the smoking behavior of the child. The results of this study seem to support this view. The adolescent smoker forges an independent identity through the process of reshaping his loyalties and affiliative bonds. He is able to gain important psychological security through participation in a group. He shows increasing concern for group recognition and approbation or commendation. Smoking appears to provide the opportunity for group acceptance and participation for a number of adolescent youth today.

Educational Implications

The high proportion of occasional smokers among the girls in 1966 could be attributed to a social phenomenon, indicating that their smoking may be related to social factors. Smoking may be initiated as a means of socialization for girls. Since the girls tend to continue their regular smoking, educational efforts should begin early before the regular smoking habit has been established. It may be that girls are not given as much encouragement to quit smoking as are boys. For example, boys may have a stronger motivation for not smoking because of the desire to participate in athletics. Also in smoking education perhaps greater emphasis should be given to the fact that smoking is a health hazard for women as well as men.

The higher percentage of those who quit smoking among the occasional smokers probably indicates the presence of experimenters and those less psychologically dependent on smoking cigarettes. The greater tendency for the occasional smoker to quit rather than to become a regular smoker points up the importance of initiating anti-smoking education during this period. Also, the educational approach for the regular smoker probably should differ from that for the occasional smoker.

Conclusions

In light of the findings of this study, the following conclusions are offered:

1. The regular cigarette smokers yield less to any smoking behavior changes than do the occasional smokers.

2. Once a girl is a regular smoker she is less likely to quit than a boy.

3. In general, the data from this study support the belief that the older students are more likely to remain regular smokers and more committed to the cigarette smoking habit. Conversely, this suggests that the older students are less likely to quit cigarette smoking.

4. The findings of this study support the idea that well organized and executed anti-smoking education programs should start as early as the eighth grade (if not earlier) since the greatest increases in regular smoking occur after the eighth grade. The ardent cigarette smokers tend to remain dependent on cigarette smoking in the upper two grades of the secondary school and therefore less responsive to the educational program.

5. Once an individual has become a regular smoker, he is not likely to reduce his rate of smoking to that of an occasional smoker.

6. Parts I and III of the Survey Form and especially the item pertaining to future smoking behavior are useful in distinguishing between different smoking behaviors. Moreover, items relating to future intentions may be the most useful predictors of future smoking behavior.

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CHAPTER VII

A PROSPECTIVE EPIDEMIOLOGICAL STUDY OF YOUTH SMOKING

Thomas W. O'Rourke

In general, smoking research has been directed toward achieving cessation or modification of the smoking habit. Too often the concept of preventing initiation and establishment of the smoking behavior pattern has not been developed. Ideally, the preventive approach should be initiated before the habit is ingrained. In this manner, those problems attendant upon any effort to alter an established behavior pattern might be avoided. As Hammond[3] stated, "...by and large, smoking habits (including the decision whether or not to smoke) are established in youth; and unless strongly motivated to change, there is a tendency for people to retain their smoking habits."

Ability to predict those factors which seem influential in creating a positive climate for smoking behavior would seem a first step toward a sound preventive program. As Davis[1] pointed out,

> There is a distinct hope that techniques can be developed to predict those youth who are likely to become smokers. Elements of this dimension should then prove helpful in developing content and methodology for effective preventive education approaches to selected groups of youngsters.

In addition, development of a means of distinguishing those cutting elements which separate non-smokers from smokers or potential smokers would seem essential to any plan of prevention. Horowitz,[4] in discussing efforts to curtail or limit smoking stated,

> I believe our greatest wedge is to begin with those pockets of non-smokers, those youngsters who don't smoke and don't plan to smoke. Find out what interests them and how they got that way. Work to see if we can influence the others along similar lines. Maybe the non-smokers can help us.

Rosenstock,[6] in discussing elements of behavior change, said

> The goal of understanding and predicting behavior should appropriately precede the goal of attempting to persuade people to modify their health practices, even though behavior can sometimes be changed in a planned way without clear understanding of its original causes. Efforts to modify behavior will ultimately be more successful if they grow out of an understanding of causal processes.

The importance of predicting behavior is brought forth by Glueck,[2] who stated

> Prediction also opens the doorway to a more fruitful management of the etiologic problem than has yet been advanced by another method or theory....By thus narrowing the field, it permits more intensive exploration of the dynamics of causation in the most relevant areas.

Purpose of the Study

The major purpose of this study was to determine the usefulness of the University of

Illinois Survey Form as an instrument for predicting the smoking behavior of a cohort of original never-smokers from a selected population of school youth. Specifically, this investigation endeavored to determine, by utilizing the prospective epidemiological approach, those attitude-belief and descriptive variables that are predictive of smoking behavior. This study as a part of the larger University of Illinois project was initiated in September, 1966, and was conducted over the period 1966-1968.

Significance of the Study

By attempting to provide a tool to predict smoking behavior, this study would appear to enhance anti-smoking education programs. Results of this study might then be utilized in the development of content and methodology designed for effective preventive educational approaches for school youth. Findings could prove helpful in reaching those students most in need of such a program through assignment of students exhibiting particular characteristics to specific types of instruction. Although it is recognized that an educational program per se does not guarantee the desired behavior, it might affect the number of individuals who eventually become smokers. Also, the effectiveness of such programs could be evaluated. For example, did the educational program alter the attitude-belief patterns of the students in the direction of non-smoker? If so, it might be possible to inculcate most efficiently non-smoking attitude-beliefs along the education continuum.

Selection of Subjects

During the period of the University of Illinois study (1966-1968) three surveys were administered. On each occasion, the University of Illinois Survey Form was employed. For the purpose of the prospective epidemiological study only those students who participated in all three surveys over the two year period were included. Students who were absent on any of the three days that the survey was administered, who were not allowed by their parents to participate in the program, who no longer attended school, or who failed to complete any part of the three survey forms were eliminated from the study.

The initial Illinois Survey was conducted in October, 1966. It was administered to 23,724 Winnebago County, Illinois youths in grades seven through twelve. However, for the purposes of this study, only the data of seventh grade students who classified themselves as never smokers on the initial survey were utilized. A grand total of 4,486 seventh grade students were included, of which 2,795 identified themselves as never smokers.

Using the same instrument, a second survey was administered to these seventh graders in April-May, 1967. A total of 3,487 students were identified as having participated in the first and second surveys and student responses for both surveys were then matched. A third survey using the same form was administered to this same group two years later in 1968. Results of the third survey matching process identified a total of 3,069 students who had participated in all three surveys. Analysis of these data revealed a reduced total of 1,927 from the original 2,795 population for never smokers. These 1,927 subjects, 784 boys and 1,143 girls, comprised the study population.

Survey Instrument Employed

The questionnaire and attitude scale utilized by Horn in his 1958 Portland study served as the basis for the survey form developed for the University of Illinois study. The instrument which was used in this investigation was developed by the University of Illinois anti-smoking education research team together with the staff of the Clearinghouse for Smoking and Health during the summer of 1966. This format underwent several revisions and was pretested to determine its usefulness. Its purpose was to collect background information on the student, his smoking behavior, and his attitudes-beliefs associated with smoking.

The survey instrument consists of a total of 88 items, including 44 questionnaire items and 44 attitude-belief items. Part I contains descriptive information, to be completed by all students; Part II is for non-smokers only; Part III is for smokers only; and Part IV, the attitude-belief section, is to be completed by all students.

In order to derive a score, attitude-belief items were assigned weighted values. Maximum values were given for a non-smoker attitude and minimum values were assigned for

a smoking attitude. Weighted values ranging from four for a maximum non-smoking attitude-belief to a zero for a minimum smoking attitude-belief were assigned to each item. The highest possible score on the attitude-belief scale was 176; the lowest possible score was 0.

A continuous scaling procedure was utilized in assigning weights to the descriptive variables of Parts I and II of the survey instrument. Again items were scaled with the higher values assigned to the non-smoking position. Although each descriptive item did have several response categories, it was not always possible to weight each alternative. In these instances the items were deleted and not used for the purposes of this study. See Appendix A for a copy of the Survey Form and the values assigned to the scaled items.

Statistical Procedures

In order to obtain a predicted smoking behavior score a multiple regression analysis was employed. Essentially this analysis involved correlations from a number of variables selected from the initial survey data of 1966. Included among these variables were items from Parts I and II of the Survey Form relating to sociological and demographic information and the attitude-belief items in Part IV. These variables formed a composite which was tested in a multiple regression correlation with the criterion behavior of smoking as revealed on the student's 1968 Survey Form. In other words, the higher the correlations of the items selected from the 1966 Survey Form with the particular smoking behavior of 1968, the more useful the item is for predictive purposes.

Independent and Dependent Variables

In order to reduce the number of variables, the forty-four attitude-belief items were subjected to factor analysis. For this study, the varimax factor rotation method was selected as most suitable. Varimax rotation is used to redistribute a factor matrix variance (such as principal axis and centroid) so that the matrix approaches a simple orthogonal structure. Use of this varimax factor rotation resulted in five factors from the forty-four attitude-belief items. Factor scores were derived by multiplying the raw data by the varimax matrix. These five factor scores were then utilized as independent variables in the multiple and step-wise correlation analysis.

Sixteen descriptive item variables from Parts I and II of the Survey Form were used in the multiple and step-wise correlation analysis. Several of these items were deleted because no satisfactory means of scaling them for scoring could be developed. Similarly, an alternative to certain items was deleted due to an inability to scale such a response in a non-smoking direction.

Those students who failed to answer all sixteen descriptive variables were eliminated from the study. This resulted in a further reduction of sixty boys and ninety-three girls. Thus, the study population was reduced to 724 males and 1,050 females. However, those students who in addition to responding to the sixteen descriptive variables also responded to an unscalable alternative (drop category) of an item were included in the study. Their data were treated via a missing data correlation program before being subjected to the multiple and step-wise regression analysis. The dependent variable or criterion behavior of the study was actual smoking behavior as indicated by each student on the third survey in 1968.

In summary, the steps in the statistical analysis of the attitude-belief and scalable descriptive items were as follows:

1. Factor Analysis of Attitude-Belief Items
   - (a) intercorrelations of all the basic data
   - (b) principal axis factor analysis
   - (c) selection of five factors
   - (d) application of varimax factor rotation
   - (e) derivation of attitude-belief factor scores.
2. Multiple Correlation

(a) intercorrelations of the five attitude-belief factors, and the sixteen descriptive variables (Independent Variables) and smoking behavior (Dependent Variables).

(b) application of the multiple correlation

(c) application of step-wise multiple correlation. Selection of items in order of their predictive ability.

Number of Subjects in the Study

Table 30 shows the number of subjects by smoking behavior, and sex. Of the original 1966 cohort of seventh grade males, 9.2 percent had become either regular smokers or occasional smokers by 1968. The corresponding figure for the females was slightly higher at 10.5 percent. During this two year period, 30.2 percent of the males and 26.2 percent of the females indicated two behavioral changes. The first was a change from a never-smoker to either a regular smoker or occasional smoker and then a reversal of behavior to an ex-smoker. Of those who did not change behavior 60.6 percent of the males and 63.3 percent of the females remained never smokers.

TABLE 30

NUMBER AND PERCENT OF STUDENTS ACCORDING TO SMOKING BEHAVIOR
Over the Two Year Period from 1966-1968
7th - 9th GRADE

Smoking Behavior*	MALE		FEMALE	
	Number	Percent	Number	Percent
1	72	9.2	120	10.5
2	237	30.2	299	26.2
3	475	60.6	724	63.3
TOTAL	784	100.0	1,143	100.0

* 1. Never smoker to a Smoker
2. Never smoker to a Smoker to an Ex-smoker
3. Never smoker to a Never smoker

Factor Analysis Data

Items having the highest loadings with each of the five factors were utilized in identifying each factor. The items used in identifying the five factors for each sex are to be found in Tables 31 and 32.

Tables 33 and 34 present the correlation matrix of the five attitude-belief factors of the initial survey and smoking behavior as indicated on the third survey. For the boys, it appears that the five attitude-belief factors are correlated with each other but not highly correlated with the dependent variable which involves the actual smoking behavior.

For the girls, with the exception of the Evaluative factor, the attitude-belief factors are highly correlated with each other. The Evaluative factor has a low negative correlation with other factors. Similar to the boys, all five factors have low correlations with smoking behavior.

TABLE 31

7th GRADE BOYS WITH VARIMAX ROTATED FACTORS
WITH FACTOR LOADINGS

Item Number	Factor 1 (Pleasure)	Factor Loading
2.	Cigarettes are pleasurable.	.64
12.	Smoking is something nice to do when you're having fun or enjoying yourself.	.61
1.	Smoking is a very relaxing pastime.	.60
23.	Teenagers who don't smoke are more respected by their classmates.	.56
3.	Lots of people smoke, and it doesn't seem to hurt them.	.50
	Factor 2 (Influence)	
43.	Teenagers smoke mainly because their parents smoke.	.52
33.	Cigarette advertising should be banned from radio and television.	.52
27.	If people knew the truth about cigarettes, they wouldn't smoke.	.49
28.	Smoking is a dirty habit.	.49
37.	Smoking is related to heart disease.	.45
26.	After a person has smoked for a year or two, he wishes that he had never started.	.45
41.	One of the main reasons teenagers smoke is to be more like adults.	.45
8.	Smoking is an impossible habit to stop.	-.43
	Factor 3 (Exemplar)	
9.	Teachers should set a good example.	.65
5.	Doctors should set a good example by not smoking cigarettes.	.60
15.	Most cigarette smokers can stop if they want to.	.52
11.	If people stopped to think about what they were doing, they wouldn't smoke.	.51
	Factor 4 (Health and Disease)	
35.	There is a relationship between lung cancer and cigarette smoking.	.56
34.	Smoking hurts performance in athletics.	.50
39.	Cigarette smoking is harmful to health.	.48
31.	Some teenagers smoke because it shows freedom from parents and teachers.	.46
38.	Parents should set a good example by not smoking cigarettes.	.42
	Factor 5 (Future Health)	
22.	Quitting smoking helps a person to live longer.	.95
25.	When I have children, I hope that they don't smoke.	.95

TABLE 32

7th GRADE GIRLS VARIMAX ROTATED FACTORS
WITH FACTOR LOADINGS

Item Number	Factor 1 (Influence)	Factor Loadings
41.	One of the main reasons teenagers smoke is to be more like adults.	.63
36.	Teenagers smoke mainly because their close friends smoke.	-.58
35.	There is a relationship between lung cancer and cigarette smoking.	.53
34.	Smoking hurts performance in athletics.	.52
31.	Some teenagers smoke because it shows freedom from their parents and teachers.	.52
	Factor 2 (Pleasure)	
12.	Smoking is something nice to do when you're having fun or enjoying yourself.	.62
1.	Smoking is a very relaxing pastime.	.59
2.	Cigarettes are pleasurable.	.58
10.	I really don't see how smoking can harm a person.	.56
23.	Teenagers who don't smoke are more respected by their classmates.	.56
	Factor 3 (Exemplar)	
5.	Doctors should set a good example by not smoking cigarettes.	.65
9.	Teachers should set a good example by not smoking cigarettes.	.65
	Factor 4 (Future Health)	
22.	Quitting smoking helps a person to live longer.	.91
25.	When I have children, I hope that they do not smoke.	.91
	Factor 5 (Evaluative)	
8.	Smoking is an impossible habit to stop.	.56
14.	One should decide for himself whether or not to smoke.	.54

TABLE 33

CORRELATION MATRIX OF ATTITUDE-BELIEF FACTORS AND SMOKING BEHAVIOR
7th GRADE BOYS

	Attitude-Belief Factors (Survey A - 1966)					Smoking Behavior (Survey C - 1968)
	1	2	3	4	5	
Pleasure	1.000	.509	.565	.419	.515	.182
Influence		1.000	.704	.670	.536	.140
Exemplar			1.000	.585	.526	.110
Health and Disease				1.000	.383	.133
Future Health					1.000	.116

TABLE 34

CORRELATION MATRIX OF ATTITUDE-BELIEF FACTORS AND SMOKING BEHAVIOR
7th GRADE GIRLS

	Attitude-Belief Factors (Survey A - 1966)					Smoking Behavior (Survey C - 1968)
	1	2	3	4	5	
Influence	1.000	.385	.813	.690	-.076	.042
Pleasure		1.000	.574	.472	-.173	.129
Exemplar			1.000	.694	-.092	.071
Future Health				1.000	-.118	.010
Evaluative					1.000	.030

Step-Wise and Multiple Correlation Data

Results of the step-wise and multiple correlation analysis are presented in Table 35. This table indicates the independent variables selected by the step-wise program in the order of their contribution to the multiple correlation. The multiple correlation findings and the percent of variance taken into account for each dependent variable by sex are summarized in Table 36.

The multiple correlation of the five attitude-belief factors and the sixteen scalable descriptive variables with smoking behavior as the dependent variable was .36 for the seventh grade males. This accounted for approximately 13 percent of the total variance for this group. For the females, the multiple correlation was .27 which was 7 percent of the variance. Results of the step-wise analysis indicated that the variable, "Do you think you will smoke cigarettes at some future time," was entered as the variable which made the highest contribution to the multiple correlation in the analysis for both boys and girls. It accounted for a greater proportion of the variance than all other variables combined.

TABLE 35

STEP-WISE MULTIPLE CORRELATION BETWEEN DEPENDENT AND INDEPENDENT VARIABLES

(7th GRADE BOYS)

Dependent Variable	Step No.	Independent Variable No.	Item No.	Variable	Multiple Correlation
Smoking Behavior 1968 Survey	1	19	22	Do you think you will smoke cigarettes at some future time?	.26
	2	12	8	How much time do you spend in community activities?	.28
	3	14	10	Does your father smoke cigarettes?	.29
	4	10	6	Have you ever been a member of an organized varsity or junior varsity school athletic team?	.31
	5	20	24	What would your mother do if you started smoking?	.32
	6	18	20	Do you know about the Surgeon General's Report on smoking?	.33

(7th GRADE GIRLS)

	1	19	22	Do you think you will smoke cigarettes at some future time?	.20
	2	15	11	Do your close friends smoke cigarettes?	.23

MULTIPLE CORRELATION AND PERCENT OF VARIANCE OF DEPENDENT VARIABLE WITH TWENTY-ONE INDEPENDENT VARIABLES

Dependent Variable	Sex	Number	Multiple Correlation	% of Variance
Smoking Behavior	Male	724	.36	13
1968 Survey	Female	1,050	.27	7

$$\% \text{ of Variance} = \text{Multiple Correlation}^2$$

Discussion

Table 30 contains the data relating to the smoking behavior classifications of the original sample of seventh grade never smokers: 784 males and 1,143 females. The difference in sample size of 359 female subjects can be partially accounted for by the higher number of male smokers at the seventh grade level at the time of the initial survey in 1966. Since the total number of males and females was approximately equal in 1966 and the number of smokers, either occasional or regular, was greater among the males, there would necessarily be more non-smokers among the females.

Tables 33 and 34 focus on the correlation matrix of the five attitude-belief factors of the initial survey and the dependent variable or criterion behavior (smoking behavior) as indicated on the third survey. Ideally, the attitude-belief factors should have low intercorrelations but high correlations with the dependent variable. As shown in these tables, the results of the factor analysis are somewhat similar for both boys and girls with the exception of the evaluative factor. This factor is not correlated with either the other four factors or the dependent variable.

Results of Tables 35 and 36 focus on the findings of the multiple correlation and step-wise analysis. As evidenced by the low multiple correlations, it appears that neither the attitude-belief factors nor the descriptive variables are useful as predictors of smoking behavior. For the seventh grade boys, the multiple correlation of the five attitude-belief variables and sixteen descriptive variables was .36, which accounts for approximately 13 percent of the variance. The corresponding multiple correlation for the seventh grade females was .27. This represents about 7 percent of the variance.

The step-wise analysis revealed that the variable, "Do you think you will smoke cigarettes at some future time" had the highest degree of correlation with smoking behavior for both the boys and girls. This question was unique in that it was the only independent variable which required the student to project his probable future smoking behavior. For the boys, the multiple correlation was .26, while the multiple correlation for all twenty-one independent variables was .36. For the girls, the value entered for this variable was .20 with the multiple correlation for all twenty-one variables at .27. It would seem, then, that the student's responses concerning his future behavior with respect to smoking was a better indicator of such behavior than the assessment of his present attitudes and beliefs or descriptive items of current status.

The failure of the survey instrument to predict subsequent smoking behavior may have been influenced by a less than honest response on the part of the students involved in this study. Although efforts were taken to secure the student's confidence, his name was a necessary prerequisite for matching purposes. Perhaps then, a number of students responded accurately to the attitude-belief and descriptive items indicating a smoking direction but did not reply truthfully to the criterion question concerning actual smoking behavior. A previous University of Illinois Smoking Education Study finding supports such a notion. Specifically, Newman,[5] utilizing the method of participant observation and structured interviews, concluded that the incidence of smoking among young people was higher than surveys conducted in the schools would indicate.

A further explanation of the lack of predictability might be the very process of utilizing a matched sample. To illustrate, it is known that smokers are absent from and drop out of school more often than never-smokers. Since failure to complete survey forms resulted in elimination from the study population, such absenteeism would result in a more selective group, characterized by a large number of never-smokers. The possible effect of such a preselection would be to lower the multiple correlation.

Conclusions

After reviewing the findings of this investigation, it might be concluded that smoking involves such a complex act that the University of Illinois Survey Form does not appear to be a valid instrument for predicting smoking behavior of secondary school youth. Although the particular variables utilized in this study failed to predict future smoking behavior, the findings of this study may have future implications for prediction of such behavior. Possibly this study has provided some insight into the types of questions which should be considered in future instruments. From the step-wise and multiple regression results, it would appear that questions about probable future behavior might serve as a predictor of future smoking behavior. Step-wise results also indicated that the attitude-belief factors did not appear to be effective predictors of smoking behavior. As indicated by their high intercorrelations, they do not appear to be measuring something unique.

Past studies support the concept that smoking behavior is such a complex act that the assumption of a linear relationship in this study might be unwarranted in attempting to predict whether the individual will remain a never-smoker or become a smoker.

The small number of never-smokers changing to smokers might indicate a lack of truthful response to the criteria question concerning actual smoking behavior. A previous University of Illinois Anti-Smoking Education Study finding supports such a contention.

In the matching process, the prerequisite of including only those who attended school on the three survey dates during a two year period of the study appeared to effect a form of preselection, since it is known that smokers have a higher rate of absenteeism.

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CHAPTER VIII

FINDINGS AND IMPLICATIONS OF THE UNIVERSITY OF ILLINOIS STUDY

William H. Creswell, Jr., Ian M. Newman, Warren J. Huffman

While the University of Illinois study sought to build on the knowledge gained from previous research, its central purpose was to develop basic data on the nature and extent of smoking among a population of Illinois youth. These data served to establish the parameters necessary for initiating a series of following studies all relating to the same general population of Illinois youth. The original group in this instance was the entire secondary school population of 23,724 students including both public and parochial school pupils of Winnebago County, Illinois.

The first phase of the study, including the survey and the mass communications anti-smoking education experiment, constituted a replication of an earlier study done by Daniel Horn in Portland, Oregon. The survey feature of this study was similar to some 20 other studies of youth smoking that have been conducted in the United States and other countries during the past 15 years.

Results from this survey made possible a reassessment of the youth smoking scene in terms of the Illinois sample and through comparisons with the Portland study and others. A well-documented baseline of information was considered essential to development of trend data on youth smoking and for evaluation of the results of subsequent educational and smoking intervention programs. In addition, the Illinois study sought new information on smoking among rural youth and the younger junior high school age students at the 7th and 8th grade levels. At the time this study was begun in 1966, only one other investigator had reported data on junior high school smoking[9] and no comparative data existed on rural youth.

All of the 23,724 students in the first survey were given an identification number. Thereafter, for each of the following surveys, student responses were related to identification numbers and were matched case by case or student by student on all three surveys that were conducted during the period from October, 1966, to October, 1968. All efforts to elucidate trends and to evaluate the results of educational experiments were based on two or more measures of precisely the same cohort of students.

One of the troublesome problems in conducting prospective studies of student populations is to secure reliable data. The mobility of today's student and the normal rate of absenteeism can lead to serious errors and to false conclusions about the data. For example, there have been instances where as many as 50 percent of the student body of a school moved during the course of a single school year. As a case in point, it was revealed that one student in the first Illinois survey completed the survey form three different times at three different schools during the two week period required to complete the first survey in October of 1966.

Keeping a record of every student and matching the data over three surveys places great demands upon the investigator. Nevertheless, such procedure does seem to be necessary in order to establish greater confidence in those findings depicting trends, as well as to create a base line for evaluating the effects of future educational programs.

Dimensions of the Study

Beginning with the first broad scale survey in 1966, a total of 12 separate and distinct, but related, studies were conducted. These studies have been concentrated along

three lines of research: (1) the characteristics of smokers and non-smokers as revealed by socio-psychological, demographic, and attitude-belief data; (2) efforts to modify or change smoking behavior; and (3) methods of developing information on trends in youth smoking.

Research on Smoker - Non-Smoker Characteristics

Admittedly, much of the research on youth smoking to date has been concerned with the traits of smokers and non-smokers. Despite this, questions still remain concerning some of the factors and about the exact nature of their relationships to smoking or non-smoking among the school age youth.

Findings from the Illinois survey were basically in agreement with those reported from the Portland survey of 1958. Areas of difference showed that smoking rates for ninth grade girls in Illinois were much higher than those of the Portland girls. Also, the patterns of relationship to parental smoking differed. Smoking habits of the mother in the Illinois study appeared to have little or no influence on the smoking of either the son or the daughter.

Hypotheses were derived from the findings of the Illinois survey and served as the focal points of Newman's study.[6] Aware of some of the limitations in survey research, Newman[6] used the method of participation observation as used in the field of cultural anthropology in an effort to answer several questions relating to the social dynamics of youth smoking. The assumption was made that a participation observation study would reveal new information that simply could not be secured by means of the self-reporting survey questionnaire. This small-scale, in-depth study covered a period of nine months, during which a series of 450 structured interviews, informal observations, and discussions with a randomly selected sample of ninth grade students composed of 40 smokers and 40 non-smokers were conducted.

Among the principal findings were the following: that smoking is significantly related to social status among girls and that peer group pressure appears to be a great deal more important as a determinant of youth smoking than other factors usually associated.

This peer group relationship was quite striking in its demarcation, with all of the girl smokers restricting their associations to those of other girl smokers; and the non-smoking girls relating only to other non-smoking girls. This study placed greater importance on the influence of the peers, while parents appeared to exert no significant influence on the smoking behavior of their sons and daughters. Other results of the study revealed that youth smokers as a group tend to be dissatisfied with their age. Unlike the non-smoker they would prefer to be older. This attitude exists, despite the fact that smokers, on the average, are already older than their peers.

In discussing these findings, Newman observed that student smokers are frequently in difficulty both academically and socially. They also resent what they consider to be unfair or inconsistent application of the rules against smoking. For example, they question the regulation permitting smoking by teachers but forbidding students the same privilege. Newman concluded that smoking among the school age young is in large measure a compensatory behavior resulting from generally poor adjustment in school with performance marked by a lack of success and positive recognition.

To reduce the incidence of smoking, school officials are encouraged to reevaluate their traditional authoritarian-disciplinarian role in attempting to control youth smoking. Newman also concluded that a didactic approach to smoking education is not likely to meet with success. In fact, the school should show less concern over the smoking problems and give more attention to developing ways of helping youngsters achieve some degree of success so that they might become happier and better adjusted individuals.

Despite the limitations of survey findings, more extensive analysis of these data was conducted which influenced the further direction and development of the study. In this regard, question 21 on the Survey Form was used to classify respondents into five different behavior categories ranging from one who has never smoked to the regular smoker. In addition to those factors usually found to be associated with smoking, certain other relationship patterns have emerged. In this regard, the 44 item attitude-belief scale section of the survey form has received considerable attention.

Rather characteristic patterns of response to certain attitude and belief statements have been shown. This fact has stimulated interest in the scale and its potential value as an educational instrument able to identify those students with a predisposition toward smoking. Drawing upon the experience gained from empirical testing with the scale and

from the opinions of a jury composed of study team members, the 44 Likert scale items were assigned weighted score values. These weightings ranged from one to five, with the higher values being given to the non-smoking position.

Proceeding with the objective of developing a test instrument, Alles[1] and Schmidt[8] used the scale in two separate studies to carry out a more extensive item analysis. Both studies used the data drawn from samples of college students with established smoking and non-smoking behaviors. Alles, employing a Key Selector Technique analysis, identified 21 items on the scale that distinguished between the two samples. Schmidt, using a factor analysis approach, selected five factors from the scale. A total of 31 items were related to the five factors and then treated as subtest scores for analysis. Four of the five subtests showed significant differences between the smoker and non-smoker groups.

Building on these results and the first major survey, a series of three prospective surveys were conducted in order to test further the constellation of factors believed to be related to smoking. Again selected variables on the Survey Form were studied over a two-year span in an effort to gain more insight as to the causes of smoking.

Lindsay[4] studied a sample of junior high school students, all of whom had made a change of behavior either from smoker to non-smoker or from non-smoker to smoker. The purpose of this study was to identify those attitude-belief factors associated with the change in smoking behavior. A premise for this study held that those factors associated with a major change of behavior such as the quitting or initiation of cigarette smoking might help to identify the causes of smoking.

The study results added a new dimension to the statistical relationship between the attitude-belief variables and smoking behavior. As students changed their smoking habits over the two-year period of the prospective study, there were also corresponding shifts in their position on the attitude-belief scales.

Continuing with this phase of research, O'Rourke conducted a prospective-epidemiological study using regression analyses to test the usefulness of the Illinois Survey Form for predicting future smoking. A sample of 1,927 non-smokers were observed over a two-year period. Attitude-belief variables together with certain other factors were correlated with smoking. However, the 21 variables tested in this multiple correlation analysis revealed correlation of .36 which was too low for purposes of prediction. Although the results were negative, the development of a computer program with the capacity to analyze this type of problem efficiently and economically would seem to be an important outcome in terms of future research. Also, despite the low correlations there were indications that certain items showed promise as predictors of future behavior. It is evident that continued study and research on the processes of behavior change will require the techniques of regression analysis and predictive equations.

The major emphasis of health education is the prevention of health problems. This is particularly true for the school smoking education program where a comparatively small percent of youth are habituated to smoking. At the same time it is important to understand the behavior of smokers and to continue the effort to help them lessen or cease smoking. Certainly there is an abundance of evidence indicating the health benefits from a reduction or cessation of smoking at any age level. Moreover, an improved understanding of the behavior patterns of smokers might well hold important implications for other areas of health education.

Following this line of reasoning, a third prospective study including 1,205 smokers was undertaken by Laoye.[3] Like the other prospective surveys, this one was conducted over a two-year period, utilizing three different grade levels. Starting with grades 7 to 10, the students moved to 9 and 12. By employing the factor of time, a special effort was made to establish a more accurate classification of smoker behavior and thereby develop a further clarification of smoker characteristics. The three types of behaviors analyzed were: (1) regular to regular--those who started as regular smokers and continued as regular smokers; (2) regular to ex-smokers--those who started as regular smokers and then stopped; and (3) occasional to regular--those who started as occasional smokers and became regular smokers.

Responses to the Survey Form were scaled and treated as group scores by the three behavior groups. There were significant differences between the regular to regular and regular to ex-smoker groups on two of the three parts of the survey that were analyzed. Although this study dealt essentially with smokers, the differences in response shown by the different behavior groups tended to confirm and to reflect the relationships between certain demographic and social factors identified by a number of other investigators.

Findings from the study included the following:

1. Students who continued as regular smokers had lower educational aspirations than did those students who had quit smoking.

2. A higher proportion of the continuing regular smoking students had parents who smoked. This was particularly true with respect to the father.

3. The level of formal education was higher for parents of ex-smokers than for regular smokers.

4. Ex-smoker students had a higher rate of participation in athletics, in extra-curricular, and in community activities than did the continuing regular smokers.

5. Although at the start of the study boys constituted a significantly greater proportion of the regular smokers, at the end of the two years there was no difference between the sexes in the proportion of regular smokers.

6. The pattern of quitting cigarette smoking is related to the type of cigarette smoker (occasional or regular), to sex, and to age. A higher proportion of occasional smokers (44 percent) quit during the two-year period than did regular smokers (26 percent).

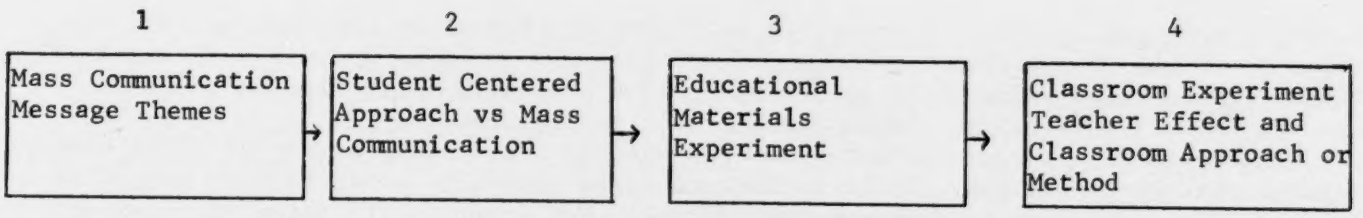
7. A higher percentage of girls than boys responded affirmatively to the question, "Will you be a smoker five years from now?," indicating a possible sex relationship.

In reference to the sex differences in the pattern of quitting smoking, there was a significant relationship between the rate of quitting for boys at the seventh to ninth grade levels. While the relationship is not significant at all levels, there appears to be a consistent pattern to support the conclusion that once a girl becomes a regular smoker, she is less likely to quit than is the boy. Analysis of these findings would seem to offer important educational benefits. According to Laoye,[3] girls may have fewer reasons or less motivation for quitting. For example, health messages tend to emphasize the health threat in relation to the male. Also, athletics and the importance of maintaining good physical condition may constitute a greater motivation to quit for boys. It may be that girls are more socially oriented and the peer pressure image of the smoker as an acceptable person may be felt more keenly by the girl. The sex differences noted in this study coupled with findings from Newman's study seem to give some basis for such an interpretation. Analysis of the data showed evidence of concern about the harmful effects of cigarette smoking even among those students who had continued as regular smokers. The full meaning and implication of this concern or attitude is difficult to interpret. Does this inconsistency suggest a predisposition to quit smoking; or does it mean, as McKennell[5] has suggested, that these are the truly dependent smokers who have even greater difficulty in quitting?

Efforts to Modify or Change Behavior

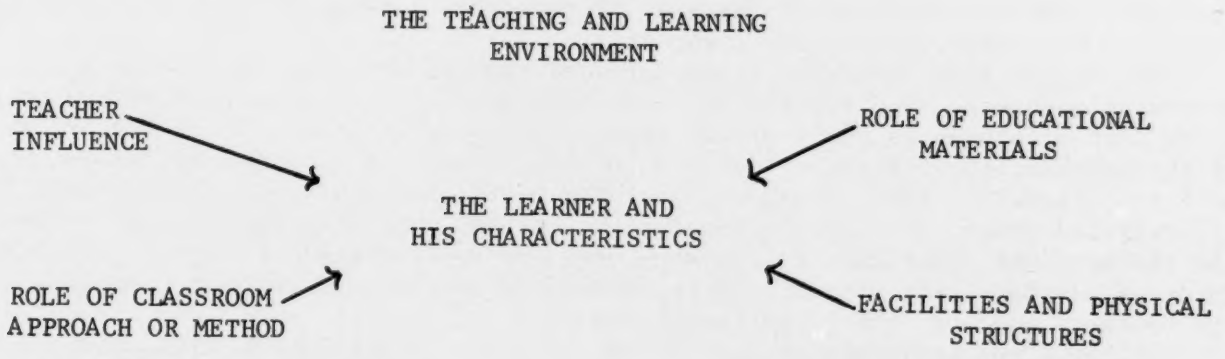
This phase of the research included four experiments which were aimed at modifying some aspect of behavior, including knowledge, attitude-belief about smoking, or smoking behavior. The studies included (1) a replication of Horn's mass communication experiment, in which five different message themes were tested; (2) a student-centered approach, where the effects of a method emphasizing student participation were tested against the mass communication approach; (3) an experiment in which student selected materials were tested to determine their effect upon students' attitudes and beliefs about smoking; and, (4) a study designed to test the effects of both classroom approaches and the influence of the teacher in smoking education.

While the initial experiment on the mass communication message themes was a replication of Horn's earlier work, the series of experiments that followed (2 through 4) were each focused on different aspects of the teaching-learning situation and each one related to the next according to the following sequences:



To study the problem of smoking behavior change in the context of school health education, the following frame of reference with selected elements of the teaching and learning environment was adopted for purposes of this research:

FIGURE 6


THE TEACHING AND LEARNING ENVIRONMENT
TEACHER INFLUENCE
ROLE OF EDUCATIONAL MATERIALS
THE LEARNER AND HIS CHARACTERISTICS
ROLE OF CLASSROOM APPROACH OR METHOD
FACILITIES AND PHYSICAL STRUCTURES

In the mass communications experiment, five different message themes were tested over a one-semester period. The results failed to confirm those of Horn's research. In this study the contemporary message theme group had a significantly lower rate of smoking, while in Horn's research the remote message group had the lowest smoking net recruitment rate. In general, the results of this experiment were inconclusive since only the contemporary group showed a lower smoking rate than the control group. The conflicting results in the two studies and the general lack of significant effects in the Illinois experiment seems to preclude the drawing of significant educational implications from this research.

The hypothesis adopted for the student-centered approach held that desired educational changes could be achieved by an educational method utilizing personal involvement and individual interaction with class peers. To test this hypothesis, two experiments were conducted, one at the eighth and one at the eleventh grade level. The design involved two test groups, one employing a symposium-discussion method (the student centered approach), one using mass communication messages, and a control group. In effect then, under controlled conditions, the personalized student-centered approach was tested against the two mass communications message themes found to be the most effective by Horn. The results of the experiments were evaluated in terms of students' changes in smoking behavior and attitude-beliefs about smoking.

Analysis of the study results showed no differences between any of the treatment groups insofar as smoking rates were concerned. However, the eighth grade classes which used the sypmosium-discussion method or student-centered approach had significantly greater or more positive changes in their attitude-belief scores than did the students in the mass communication classes. Thus, in this instance the research hypothesis was at least partially confirmed, in that the personalized approach did produce more favorable changes in attitude and belief.

From the standpoint of educational implications, it would seem that the student-centered approach was a more effective method than the mass communications in bringing about desired educational changes among eighth grade students. Further, the symposium-discussion technique appeared to be more effective with junior high school students than with senior high school students. It would appear that the peer group, as a force for educational influence, has greater potential at the junior high level.

The third experiment sought to ascertain the educational effect of certain prepared materials specifically designed to alert and to inform the public about the hazards of cigarette smoking. In this regard, it was hypothesized that a more extensive exposure to

carefully selected materials represented an important element in the smoking education program. If the abbreviated announcements and messages employed by mass media can produce changes in attitudes-beliefs and practices, then a carefully controlled and increased exposure to such information should produce even greater results.

While this experiment with materials represented a different aspect of the teaching-learning situation from that of the student-centered approach, other factors were also incorporated in order to produce greater effects. For example, the materials used were those selected and rated highest by teenagers for their appeal and informational value. After being selected, the materials were arranged into a sequence of four study sessions or lessons according to the steps identified in the behavior change model developed by Hochbaum and others.[2] These steps are as follows: (1) an awareness of the threat, (2) an acceptance of the importance of the threat, (3) the personal relevance of the threat, and (4) the susceptibility of the threat to intervention.

The test group that studied these materials did, in fact, show significantly more favorable changes of attitude and belief than did the control group. It was therefore concluded that materials on the hazards of cigarette smoking did constitute an important aspect of the teaching-learning experience.

The fourth in this series of experiments evolved from the experience gained from the preceding research. The educational materials and the symposium-discussion method found to be most effective in the previous experiments were utilized. In a test of the effect of the teacher, the classroom approach or method, and the interactions of these two factors were also studied. Three different teaching approaches were tested: (1) Individual study, (2) Peer-led group, and (3) the Teacher-led method. The effectiveness of the methods and the teachers was determined by the knowledge and attitude-belief scores of students. Two types of teachers, the regular classroom and the specialized teacher, were used. Each of the teachers employed the three teaching methods.

Although the influence of curriculum and study materials was held constant for all of the treatment groups in order to test the effects of teachers and classroom methods, it was observed that all groups showed large significant gains in attitude-belief scores. This fact seems to offer strong support for the conclusions that the curriculum materials and sequence of lesson were effective in producing desired educational changes.

There was a consistent pattern of findings which showed that those groups taught by the regular classroom teachers utilizing the Individual Study method had significantly greater changes in attitude-belief scores. The reasons why the regular classroom teacher achieved superior results are not readily apparent. It might be that these teachers had rapport with their students which enabled them to achieve superior results in terms of the attitude-belief changes. In any case, the results of this study should be considered in any attempt to assess the advantages of using a specialist or expert to teach special topics.

The apparent success of the Individual Study method also deserves some comment. This finding seems to reinforce the concept that the individualization of instruction represents the ideal condition for teaching and learning. This approach appeared to combine the advantages of freedom and flexibility in the individual approach to learning with the supportive environment of the presence of the teacher as a resource when needed.

The superior results of the students with the Individual Study method seems to raise a serious question about some of the traditional patterns of organization and teaching procedures in the schools. At the very least these results suggest that students need to be given more freedom and opportunity to develop initiative and self-reliance in their school experience. The findings from this experiment and from Newman's[6] participant observation study point to the benefits of providing more attention to the individual student and greater flexibility in school programs.

In conclusion, the necessity of conducting experiments in the so-called natural school setting with all of its existent conditions of class structure and class size still represents a major obstacle in educational research. While statistical techniques are available to help overcome some of these difficulties, there are still uncontrolled factors that may well obscure the true results of the experiment. For example, one possible explanation for the relatively poor showing of the peer-led classes in this experiment might have been the fact that, by random selection, the largest classes were assigned to this method. This greater size may have hampered the effectiveness of the group methods employed.

Smoking Rates and Trends Among Illinois Youth

As stated earlier in this chapter, one major purpose of the Illinois research was to investigate and to determine current smoking trends among secondary school youth. It was the contention of the Illinois research team that a longitudinal or prospective survey of the same students with matched data from one survey to the next would provide a more accurate picture of trends in youth smoking than would a one-time study. Therefore, a series of three surveys was conducted, the first in October of 1966, a second in May of 1967 and the third in October, 1968.

Table 37 summarizes the data on smoking rates by grade level and sex for all three surveys (A, B, and C). Survey A included 23, 724 students from grades seven through twelve. The same form and procedures were used for the second and third surveys (B and C). In order to expedite the data collection, class roster lists were secured from all of the Winnebago County schools prior to administration of the second and third surveys. Names of the students on these class rosters were then checked against the names of the students participating in the first survey. Coded answer forms were prepared for all matching cases. Thus, from Survey B, administered approximately eight months after Survey A, a total of 20,026 matched cases and 3,698 unmatched cases were secured. Approximately 16 months later, in October of 1968, Survey C was conducted, obtaining a total of 10,420 A-B-C matched cases and 2,548, A-B&C unmatched cases.

A comparison of the smoking rates for the matched survey cases A-B and A-B-C revealed quite similar results. When these two groups were compared to the initial survey A of 1966, smoking rates were slightly lower at each grade level for both boys and girls. However, it should be noted that these grade level comparisons actually represented different student samples and the differences shown were probably well within the range of sampling error.

TABLE 37

UNIVERSITY OF ILLINOIS PROSPECTIVE SURVEY STUDY OF YOUTH SMOKING 1966-1968
(A COMPARISON OF SMOKING RATES OF WINNEBAGO COUNTY ILLINOIS YOUTH BY GRADE SEX AND YEAR)

	Survey A 1966			Survey B 1967						Survey C 1968					
Grade	Boys-Girls-Total			Boys-Girls-Total Matched A-B			Boys-Girls-Total Unmatched A&B			Boys-Girls-Total Matched A-B-C			Boys-Girls-Total Unmatched A-B&C		
7	15.3	07.6	11.5	14.4	07.0	10.7	20.3	12.1	16.6	----	----	----	----	----	----
8	18.4	11.5	15.1	16.5	09.3	13.0	27.8	23.4	25.7	----	----	----	----	----	----
9	22.6	13.7	18.1	20.4	12.2	16.2	34.6	24.3	29.9	19.3	16.4	17.7	27.0	22.3	24.8
10	24.9	19.0	21.9	21.6	17.7	19.6	40.4	26.0	33.4	23.8	16.6	20.2	32.6	25.7	29.4
11	30.3	20.8	25.6	25.7	20.3	23.0	51.8	24.6	40.7	29.2	21.7	25.3	36.2	24.6	30.7
12	33.5	26.8	30.1	31.5	24.5	27.9	41.3	38.4	40.0	29.2	27.3	28.2	48.4	28.8	38.7
	N = 23,724			N = 20,026			N = 3,698			N = 10,420			N = 2,548		

Examination of these data from a longitudinal perspective made it possible to record observations of the same sample of students at different points in time. Thus, when the three surveys had been concluded, observational data had been recorded over the two year period on four different samples or cohorts of boys and girls. Table 38 contains the data on these samples, showing the number of students in each of the different two year grade groups, the rate of smoking at the beginning and at the end of the two year period, and the rate of increase in smoking for each group. These data showed that girls generally had lower smoking rates than did boys. However, all of the girls' groups had a higher rate of increase in smoking for the two year period, except for the 8-10th grade group.

Data in Table 37 reveal a very important factor: the differences in the percentage of smokers between the matched and unmatched surveys. For example, eleventh grade boys on the A-B matched survey had a smoking rate of 26.7 percent, while the unmatched surveys

revealed a smoking rate of 51.8 percent. Examination of Tables 39 and 40 (see Appendix C) shows that for both boys and girls, at every grade level, the proportion of smokers is higher in the unmatched group. Further examination of these data reveals that these differences are significant at all grade levels for both sexes except for the eleventh grade girls. The question rises as to the cause of this higher smoking rate among the unmatched sample. Could some particular characteristic of smoking or non-smoking behavior effect such a difference?

TABLE 38

SMOKING RATES AND RATES OF INCREASE FOR THE FOUR DIFFERENT GRADE LEVEL SAMPLES FOR BOYS AND GIRLS OVER THE TWO YEAR PERIOD FROM 1966 TO 1968

BOYS						GIRLS					
Number Boys	2 Year Grade Levels		Percent of Smoking		% of Increase	Number Girls	2 Year Grade Levels		Percent of Smoking		% of Increase
	1966	1968	% - 1966	% - 1968			1966	1968	% - 1966	% - 1968	
1,471	7 -	9	14.4	19.3	4.9	1,598	7 -	9	7.0	16.4	9.4
1,365	8 -	10	16.5	23.8	7.3	1,339	8 -	10	9.3	16.6	7.3
1,140	9 -	11	20.4	29.2	8.8	1,220	9 -	11	12.2	21.7	9.5
1,701	10 -	12	21.6	29.2	7.6	1,216	10 -	12	17.7	27.3	9.6

Underreporting of Smokers

Most of the research on youth smoking, including the University of Illinois Study, has revealed an association between smoking and poor academic performance. These data also indicate that smokers are less involved in the school's extracurricular activities and have lower educational aspirations. Each of these factors is closely related to the tendency to drop out of school. In a related study, Richards and Crowdy[7] have shown that among a group of 5,000 British soldiers, the majority of smokers were also school dropouts. In addition, there is evidence linking cigarette smoking to illness, even among adolescents, which would presumably be related to a higher absentee rate for those students who are cigarette smokers. Newman[6] has shown that smokers are more likely to be tardy, truant, or suspended from school. This information leads to the assumption that at any given time, such as the time the survey was taken, more smokers were likely to be absent than non-smokers. Hence any data gathered on a school population would be a conservative estimate of the actual number of adolescent smokers therein.

It was hypothesized that in any two surveys, separated by a significant interval of time, non-smokers would constitute a significantly higher proportion of those subjects who were available for both surveys. It would follow then, that populations which could be matched in two surveys (i.e. cases which were present for both surveys) would contain a higher proportion of non-smokers than populations which could not be matched in the same two surveys (i.e. cases which were absent from either survey). This conclusion, coupled with the tendency for certain smokers to avoid disclosing their smoking habits as Newman[6] has described, compounds the error.

Implications

From the school's standpoint, then, since at any given time, more smokers are absent from the classroom than non-smokers, anti-smoking education is not reaching the prime population, and therefore maximum efficiency is lost. This loss increases with grade level, as more smokers than non-smokers become early dropouts. To maximize efficiency, anti-smoking programs should be designed to fill a prolonged period of time or repeated blocks of time, in attempt to avoid smoker absenteeism. These anti-smoking education programs should come early in the student's educational sequence, long before he is a smoking absentee statistic or a drop out who smokes.

In this society, the school is still the last chance for a controlled exposure to health education. However, those designing the educational programs must recognize the unique characteristics of their target population lest the extent of the problem be underestimated and programs be designed which do not meet the problem.

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APPENDIX A

Survey Procedures

Survey Procedures and Data Processing

Throughout the study the project personnel have deemed it necessary to establish a harmonious working relationship with the schools involved in the study, and to exert close control over the administration of the survey instrument and the educational materials. Both of these objectives have been attained by personal contact of the study personnel with the school personnel in the test area.

Once the site of the study had been selected, city and county school and health officials were contacted and a meeting was arranged, at which time the principal investigator of the study described its nature and purpose.

In mid-September, study personnel contacted individual school administrators of all sixty-two schools in order to arrange meetings to brief them on a first-hand basis as to the nature and purpose of the study. This was a vital step because it helped to establish a personal relationship between the school and the study. At this meeting the extent of the school's involvement, the individual adjustments, and details for the administration of the survey were worked out to the convenience of the particular school.

On this occasion, letters were given to the school administrators to be distributed approximately one week before the survey was to be conducted.

During the last week of September, form letters explaining the basic details of the study were sent to each of the teachers involved. This was done after contact with the school administrators.

During the month of October, the survey was conducted. Study personnel were on hand in each of the sixty-two schools. Great pains were taken to exert control over the situation during the administration of the instrument. Wherever possible, instructions for filling out the survey forms were given by study personnel over the public address system. Where public address systems were not available, one of two alternatives was used: orientation meetings were arranged with teachers, at which time they were given instructions on how to administer the survey, or classes were grouped into a single room and a member of the study team administered the survey personally.

This personal contact proved of great assistance in controlling the experimental procedure, relieving the teachers of interpretation of instructions, minimizing the loss of time and materials, and solidifying the position of the study personnel in the individual schools and their relationship with the various school administrators.

All materials used in connection with the survey (booklets, answer sheets, envelopes, pencils, and demonstration cards) were counted out to make sure that each class had enough.

Study personnel both brought the materials and removed them from the school on the day the survey was administered. At that time, preliminary details and dates for the treatment periods were also set.

In November, at the end of the initial survey period, letters were written to each individual school thanking them for their cooperation and reminding them of succeeding stages of the study.

It is important to note that the responsibilities for working with the individual schools were patterned in such a way as to insure each school working with only one member of the study team. This aided greatly in establishing rapport and also in eliminating possible administrative confusion.

Data Processes

When all answer sheets had been completed by each school, study personnel examined each answer sheet individually to insure that every step of the instructions had been followed.

All answer sheets were then submitted to the Statistical Service Unit of the University. Two IBM data cards were punched for each answer sheet, using a Digitek optical scanner coupled to a Digitek card punch. This operation includes a step whereby the equipment rejects all answer sheets with missing identification data. This was the first of a series of checks to insure that all data cards were complete and accurate. Answer sheets rejected by this process were included wherever possible.

Because of the mechanical limitations of the Digitek equipment, not all items of the identification information could be checked in this step. Therefore, all data cards were then processed by an IBM 1460 computer with a program to check and mark all incorrect or incomplete data cards. A printout of these cards was then made, using the IBM 407. This

printout was used to assist in correcting data cards.

All data cards containing errors were then checked by study personnel and the missing information added. When the needed information was not readily available in the study office, phone calls were made to the schools involved and the required information was obtained from school administrators. All corrected cards were then replaced in the data decks and a final printout was made. This was again scanned by study personnel for additional irregularities and incorrectly sequenced cards.

Data decks were then considered ready for computer processing. These processes insured the retrieval of all possible data.

UNIVERSITY OF ILLINOIS

September 22, 1966

ANTI-SMOKING EDUCATION STUDY

MEMO TO: School Administrators and Junior and Senior High School Teachers in Winnebago County

SUBJECT: The University of Illinois Anti-Smoking Education Study

The University of Illinois and the United States Public Health Service in cooperation with the schools of Winnebago County are conducting a survey on the smoking habits of junior and senior high school students. This study is very similar to several others that are being conducted in different communities throughout the United States. Specific procedures involved in this study are as follows:

1. In October a special orientation session will be held for school personnel regarding the administration of the study.

2. During the latter part of October or the early part of November a preliminary survey will be administered to all pupils by teachers under the direction of project personnel. It will take approximately thirty minutes of the student's time to complete the form.

3. Educational messages will be distributed to students at three different times during the period between February and May. These materials will be sent to the schools so that each student receives his own personal copy.

4. In May a post-survey form will be administered to all students.

The first phase of the study is designed to replicate the Horn Portland Smoking Study of 1958. Major objectives of the study are to determine: (a) the characteristics of the smoker, (b) the percent of smokers among the respective school age groups, and (c) the effect of the educational messages.

Findings from the first phase of the study will be used as the basis for further research in developing programs designed to prevent smoking. We believe that the findings from this study may be of great importance to our future educational efforts and appreciate greatly your assistance in this endeavor.

Sincerely,

William H. Creswell, Jr.
Professor of Health Education

WHC/pw

U N I V E R S I T Y O F I L L I N O I S

Anti-Smoking Education Study

Health Education Laboratory, Room 212 Huff Gymnasium

September 28, 1966

Dear Parent:

The University of Illinois and the United States Public Health Service in cooperation with the schools of Winnebago County are conducting a survey on the smoking habits of junior and senior high school students.

Within the next month the survey will be given in the schools in your community. Questions on the survey form are for the purpose of determining what students think and do with regard to smoking.

This study is similar to several others that are being conducted in different communities throughout the United States. This is an important research project and we would like very much to have your child participate in the study. There are NO questions of an embarrassing nature on the survey; we are simply asking routine questions that reflect how teenagers feel about smoking in general. Your child's answers will be held confidential.

However, if you object to your child's answering questions about smoking, please sign in the space provided at the bottom of this letter and return it to the school.

Sincerely,

William H. Creswell, Jr.
Professor of Health Education

WHC/pw

Please excuse my child from participation in the Smoking Study Survey.

_____

(Parent or Guardian)

UNIVERSITY OF ILLINOIS ANTI-SMOKING EDUCATION STUDY

COLLEGE OF PHYSICAL EDUCATION

December 1, 1967

You are invited to attend and participate in a special meeting on smoking research relating to the University of Illinois Anti-Smoking Education Study. This meeting will be held on Tuesday, December 12 at the University of Illinois, Champaign-Urbana, Illinois. As you may know, this is one of several research projects that are being conducted in the United States and supported through contract research with the National Clearinghouse for Smoking and Health in the Public Health Service.

The conference is in conjunction with an official site visitation by Dr. Daniel Horn and Mr. Roy L. Davis from the National Clearinghouse. The major purposes of this meeting are to make a progress report on research completed thus far and to discuss plans tentatively adopted for the next phase of the study.

Representatives from both official and voluntary agencies as well as the Interagency Council on Smoking and Health have been invited to attend. This includes persons from local, state, and national offices and representatives of those voluntary agencies having a major concern with cigarette smoking as a health problem. It is the desire of the study team members and the Clearinghouse staff that we have an opportunity to share our thinking with you and, at the same time, to have the benefit of your ideas and suggestions relative to the future directions of this research.

Enclosed is a copy of the tentative program as it has been developed for the conference. Also in addition, you will receive very shortly a copy of the first major report of the study which was presented at the annual meeting of the APHA in Miami. We hope that you will have an opportunity to review the paper prior to the conference as background material for our discussion.

Please note on the program that you are to be a guest of the Department of Health and Safety Education at a special luncheon on Tuesday to provide an opportunity for University personnel to meet those persons who will be attending the conference.

If we can be of assistance to you in either arranging transportation or housing while in Champaign-Urbana, please let us know.

Sincerely,

William H. Creswell, Jr.
Principal Investigator

WHC/pfw

February 21, 1968

MEMO TO: Principals, Winnebago County Schools

SUBJECT: Program Report University of Illinois Anti-Smoking Education Study

As you will recall from my letter in December, we have completed the preliminary phase of our study which was conducted last school year 1966-67. Also as mentioned in the letter, we have modified our original schedule somewhat in order to provide more time to analyze more completely the data collected during the school year 1966-67. This work is now progressing nicely and we hope to have a further report of these findings in the late spring.

In the meantime we are conducting some work preliminary to the development of experimental curriculum materials for use in schools. For example, we are revising our attitude scale and developing a knowledge test which will be needed to assess the effects of an educational program. In addition, a student evaluation of existing anti-smoking educational materials is being conducted.

We have planned to make a personal visit to a number of the schools in Winnebago and Rockford during the later part of April or first of May. The purpose of these visitations is to discuss with school officials and teachers our ideas for an anti-smoking educational approach. We, no doubt, will need your advice as to the approach that is most realistic and practical.

Sincerely,

William H. Creswell, Jr.
Professor of Health Education

APPENDIX B

Instruments

UNIVERSITY OF ILLINOIS SURVEY

GENERAL DIRECTIONS

This is a survey being conducted by the University of Illinois and the U. S. Public Health Service. The answers are needed for research purposes. We want to find out how you feel about a number of things, and we would like you to help us.

1. This is not a test, so there is no right answer. Answer the questions frankly and truthfully. Your teachers and other people in your school will never see the answers that you have written.

2. Please answer the questions as quickly as you can. Do not spend time puzzling over them. Give the first natural answer that comes to you. Some questions are similar, but no two are exactly alike, and your answers may differ in these cases. You should finish the entire survey within 30 minutes.

3. Although you are to read the questions in this booklet, you MUST put your answers on the answer sheet, alongside the same number as in the booklet.

4. All answers are to be marked in PENCIL. You may use any type of PENCIL to mark your answer sheet; you do not need a special pencil. Do NOT use ink or a ball-point pen.

5. Be sure that your marks on the answer sheet are clear and dark.

6. If you wish to change an answer, be sure to ERASE the old answer. Answer only ONCE to each question or statement.

7. In filling in your answers on the answer sheet, proceed from left to right, ACROSS the page, for example:

1. ☐A ☐B ☐C ☐D ☐E 2. ☐A ☐B ☐C ☐D ☐E 3. ☐A ☐B ☐C ☐D ☐E

8. While filling out the survey, you will find special instructions labeled, "WHAT TO DO." Please follow these instructions as they apply to you, when you come upon them.

9. If you have any questions now or while filling out the survey, raise your hand, and your teacher will help you.

DO NOT OPEN THE SURVEY BOOKLET UNTIL YOU ARE TOLD TO DO SO.

BUREAU OF THE BUDGET. 68-R-936 EXP. 9-30-70

1. How far do you plan to go in school?

0 **a. I do not plan to finish high school.**
1 **b. I plan to finish high school.**
2 **c. I plan to go to college.**
3 **d. I plan to further my education in business school, vocational, or technical school, nursing, etc.**
e. I am uncertain at this time.

2. Select the answer which best indicates the highest level of schooling that your mother completed.

a. I don't know, or this question does not apply to me.
0 **b. She did not finish high school.**
1 **c. She completed high school.**
2 **d. She attended college.**
3 **e. She completed college.**

3. Select the answer which best indicates the highest level of schooling that your father completed.

a. I don't know or this question does not apply to me.
0 **b. He did not finish high school.**
1 **c. He completed high school.**
2 **d. He attended college.**
3 **e. He completed college.**

4. Where do you live?

d **a. On a farm.**
r **b. In a town of less than 2,500.**
o **c. In a city of more than 2,500 but less than 25,000.**
p **d. In a city of more than 25,000.**

5. Are you currently a member of an organized varsity or junior varsity school athletic team?

0 **a. No.**
1 **b. Yes.**

6. Have you ever been a member of an organized varsity or junior varsity school athletic team?

0 **a. No.**
1 **b. Yes.**

7. How much time do you spend in school groups such as student government, service clubs, musical groups, drama, school newspaper, FFA (Future Farmers of America), FTA (Future Teachers of America), or other school group activities?

0 **a. None.**
1 **b. I spend less than an hour a week.**
2 **c. I spend 1 to 2 hours a week.**
3 **d. I spend 3 to 5 hours a week.**
4 **e. I spend over 5 hours a week.**

8. How much time do you spend in community activities such as Scouts, "Y" groups, church groups, service groups, or other community group activities.

0 **a. None.**
1 **b. I spend less than 1 hour a week.**
2 **c. I spend 1 to 2 hours a week.**
3 **d. I spend 3 to 5 hours a week.**
4 **e. I spend over 5 hours a week.**

9. Do you consider yourself to be

0 **a. of normal weight.**
1 **b. underweight.**
2 **c. overweight.**

10. Does your father smoke cigarettes?

0 **a. Yes.**
1 **b. He used to smoke but gave it up less than 1 year ago.**
2 **c. He used to smoke but gave it up more than 1 year ago.**
3 **d. No.**
4 **e. This question does not apply to me.**

11. Do your close friends smoke cigarettes?

0 **a. All or most of them do.**
1 **b. All or most of them do not.**
2 **c. Some do and some do not.**

12. Have any of your relatives or friends died of lung cancer?

0 **a. Yes.**
1 **b. No.**
c. I don't know.

BUREAU OF THE BUDGET. 68-R-936 EXP. 9-30-70

13. Which one of the following diseases do you fear most?

d **a. Diabetes.**
b. Polio.
r **c. Lung cancer.**
o **d. Tuberculosis.**
p **e. Heart disease.**

14. Which one of the following diseases do you consider to be the most important health problem in relation to cigarette smoking?

d **a. Chronic bronchitis or emphysema.**
b. Polio.
r **c. Lung cancer.**
o **d. Tuberculosis.**
p **e. Heart disease.**

15. Which one of the following diseases do you know the most about?

d **a. Chronic bronchitis or emphysema.**
b. Polio.
r **c. Lung cancer.**
o **d. Tuberculosis.**
p **e. Heart disease.**

16. Which of the following do you consider to be the ONE BEST WAY to learn about the effects of smoking?

d **a. Films.**
b. Class lesson.
r **c. Newspapers.**
o **d. Radio and television.**
p **e. Pamphlets and posters.**

17. Which of the following do you consider to be the ONE BEST WAY to learn about the effects of smoking?

d **a. Class discussions.**
r **b. Special talks by experts in class or assembly programs.**
o **c. By talking with other students.**
d. Special talks by students in class or assembly
p **programs.**

18. Which one of the following statements do you consider to be the most important to you?

d **a. Teachers, parents, coaches, and doctors agree that teenagers should not smoke.**
r **b. It is easier not to start smoking than to try and quit later.**
o **c. New facts have been published about the dangers of smoking and I should warn my**
p **parents.**
d. If I smoke, my chances of getting lung cancer are greatly increased.
e. Smoking has a bad and a good side, and the person should make his own decision concerning smoking.

19. Does your mother smoke?

0 **a. Yes.**
1 **b. She used to smoke but gave it up less than 1 year ago.**
2 **c. She used to smoke but gave it up more than 1 year ago.**
3 **d. No.**
e. This question does not apply to me.

20. Do you know about the Surgeon General's Report on smoking?

0 **a. I have never heard of it.**
1 **b. I've heard of it but don't know much about it.**
2 **c. I know what the report is about.**

21. Select the ONE statement that best describes you at the present time.

0 **a. I usually smoke cigarettes just about every day.**
1 **b. I now smoke cigarettes once in a while but not every day.**
2 **c. I used to smoke cigarettes just about every day, but I don't smoke them now.**
3 **d. I have smoked cigarettes a few times, but I don't smoke now.**
4 **e. I have never smoked cigarettes.**

WHAT TO DO:

If you marked a or b of question 21 skip to question 30 (Part III). If you marked c, d, or e of question 21 continue with question 22 (Part II)

PART II

Answer the following questions only if you marked c, d, or e in question 21, page 3.

22. Do you think you will smoke cigarettes at some future time?

0 **a. Definitely yes.**
1 **b. Probably yes.**
3 **c. Definitely no.**
2 **d. Probably no.**

23. If you were to begin smoking now, who would be the person most upset about it?

d **a. Mother.**
r **b. Father.**
c. Minister, Priest, or Rabbi.
o **d. Best boy friend.**
p **e. Best girl friend.**

24. What would your mother do if you started smoking now?

3 **a. She would forbid it.**
2 **b. She would disapprove.**
0 **c. She would approve.**
1 **d. She wouldn't care.**
e. I don't know.

25. What would your father do if you started smoking now?

3 **a. He would forbid it.**
2 **b. He would disapprove.**
0 **c. He would approve.**
1 **d. He wouldn't care.**
e. I don't know.

26. If you have EVER smoked, about how long did you smoke?

d **a. Less than 1 month.**
r **b. From 1 month up to 1 year.**
c. For more than 1 year up to 2 years.
o **d. More than 2 years.**
e. I have never smoked.
p

27. If you NO LONGER smoke, how long has it been since you stopped smoking?

d **a. Less than 1 month.**
r **b. From 1 month up to 1 year.**
c. For more than 1 year up to 2 years.
o **d. More than 2 years.**
p **e. I have never smoked.**

28. The Surgeon General's Report on smoking

d **a. influenced my decision not to smoke.**
r **b. influenced my decision to stop smoking.**
o **c. had no influence on my decision about smoking.**
p **d. has not influenced me because I haven't heard of it.**

29. The warning label on cigarette packages

d **a. influenced my decision not to smoke.**
r **b. influenced by decision to stop smoking.**
o **c. had no influence on my decision about smoking.**
p **d. has not influenced me because I haven't heard of it.**

Now turn to question number 45 (Part IV) and continue. Be sure to mark the answer to question 45 in space 45 on the answer sheet.

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PART III

WHAT TO DO:

Answer the following questions ONLY if you have marked a or b in question 21. Remember to begin your answers in this section with number 30. Be sure to mark your answer to question 30 in space 30 on the answer sheet.

30. How long have you been smoking?

3 **a. Less than 1 month.**
2 **b. From 1 month up to 1 year.**
1 **c. For more than 1 year up to 2 years.**
0 **d. More than 2 years.**

31. On the average, how many cigarettes do you smoke a WEEK?

4 **a. I smoke less than 1 pack a week.**
3 **b. I smoke about 1 pack (20) a week.**
2 **c. I smoke about 2 packs (40) a week.**
1 **d. I smoke about 3 packs (60) a week.**
0 **e. I smoke more than 3 packs (60) a week.**

32. When I smoke cigarettes, I usually smoke

d **a. regular, non-filter.**
r **b. regular, filter.**
c. king-size, plain.
o **d. king-size, filter.**
p **e. any kind available.**

33. When do you usually smoke cigarettes?

d **a. When I am by myself.**
r **b. When I am with people my own age.**
c. When I am with older people.
o **d. I am just as likely to smoke at any of these**
p **times.**

34. How do you usually feel when you smoke cigarettes?

d **a. I feel happy, or I am having fun.**
r **b. I feel nervous, upset, or I am unhappy.**
c. When I feel there is nothing else to do.
o **d. I am just as likely to smoke at any of these**
p **times.**

35. Select the ONE reason that best explains why you feel you started smoking cigarettes.

d **a. To see what it was like.**
r **b. Because my friends smoked.**
c. Because my parent(s) smoked.
o **d. To act or feel more like an adult.**
p **e. Some other reason not given here.**

36. Select the one reason that best explains why you now smoke.

d **a. My friends smoke.**
r **b. I enjoy it.**
c. It calms me.
o **d. I feel like an adult.**
p **e. Some other reason not given here.**

37. Do you smoke in the presence of either of your
d parents?
r **a. Yes.**
o **b. No.**
p

38. How does your mother feel about your smoking cigarettes?

0 **a. She says it's OK to smoke.**
2 **b. She disapproves of my smoking.**
3 **c. She forbids my smoking.**
1 **d. She doesn't care.**
e. I don't know.

39. How does your father feel about your smoking cigarettes?

0 **a. He says it's OK to smoke.**
2 **b. He disapproves of my smoking.**
3 **c. He forbids my smoking.**
1 **d. He doesn't care.**
e. I don't know.

40. How has the Surgeon General's Report on Smoking influenced your cigarette smoking?

0 **a. I smoke more now.**
2 **b. I smoke less now.**
1 **c. My smoking has not changed.**
d. Doesn't apply because I have never heard of it.

41. How has the warning label on cigarette packages influenced your cigarette smoking?

0 **a. I smoke more now.**
2 **b. I smoke less now.**
1 **c. My smoking has not changed.**
d. Doesn't apply because I have never heard of it.

42. Are you in any way concerned about the possible harmful effects of smoking on your health?

0 **a. Not at all concerned.**
1 **b. Only slightly concerned.**
2 **c. Fairly concerned.**
3 **d. Very concerned.**

43. Select the reason that best describes your feelings toward your cigarette smoking.

d **a. I am satisfied and have no wish to quit.**
b. I wish I had never started but don't plan to
r **quit now.**
c. I want to quit, but I am not sure that I can.
0 **d. I definitely plan to quit.**
e. I plan to cut down on the number of cigar-
p **ettes, but I do not plan to quit.**

44. Will you be a cigarette smoker five years from now?

0 **a. Definitely yes.**
1 **b. Probably yes.**
2 **c. Probably not.**
3 **d. Definitely not.**

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PART IV

WHAT TO DO:

EVERYONE Please Answer the Remaining Questions. To answer, simply mark the letter which best represents your feelings. This is the code:

Strongly Agree	Mildly Agree	Neither Agree Nor Disagree	Mildly Disagree	Strongly Disagree
☐ A	☐ B	☐ C	☐ D	☐ E

Remember to mark the letter which best tells how you feel. Remember to begin your answers in this section with number 45. Be sure to mark your answer to question 45 in space 45 on the answer sheet.

45. Smoking is a very relaxing pastime.
    0, 1, 2, 3, 4
46. Cigarettes are pleasurable.
    0, 1, 2, 3, 4
47. Lots of people smoke, and it doesn't seem to hurt them.
    0, 1, 2, 3, 4
48. Smoking costs more than the pleasure is worth.
    4, 3, 2, 1, 0
49. Doctors should set a good example by not smoking cigarettes.
    4, 3, 2, 1, 0
50. People who smoke are usually more friendly than people who don't.
    0, 1, 2, 3, 4
51. One of the main reasons teenagers smoke is to be part of the group.
    4, 3, 2, 1, 0
52. Smoking is an impossible habit to stop.
    0, 1, 2, 3, 4
53. Teachers should set a good example by not smoking cigarettes.
    4, 3, 2, 1, 0
54. I really don't see how smoking can harm a person.
    0, 1, 2, 3, 4
55. If people stopped to think about what they were doing, they wouldn't smoke.
    4, 3, 2, 1, 0
56. Smoking is something nice to do when you're having fun or enjoying yourself.
    0, 1, 2, 3, 4
57. There is nothing wrong with smoking.
    0, 1, 2, 3, 4
58. One should decide for himself whether or not to smoke.
    4, 3, 2, 1, 0
59. Most cigarette smokers can stop if they want to.
    4, 3, 2, 1, 0
60. Most people would be better off if there were no such things as cigarettes.
    4, 3, 2, 1, 0
61. If parents smoke, they should allow their children to smoke.
    0, 1, 2, 3, 4
62. Cigarettes do more good for a person than harm.
    0, 1, 2, 3, 4
63. If I had my way about it, there would be a law against smoking.
    4, 3, 2, 1, 0
64. To be popular, one has to smoke cigarettes.
    0, 1, 2, 3, 4
65. Cigarette smoking frequently causes death and disease.
    4, 3, 2, 1, 0
66. Quitting smoking helps a person to live longer.
    4, 3, 2, 1, 0
67. Teenagers who don't smoke are more respected by their classmates.
    4, 3, 2, 1, 0
68. There is nothing wrong with smoking as long as a person smokes moderately.
    0, 1, 2, 3, 4
69. When I have children, I hope that they do not smoke.
    0, 1, 2, 3, 4
70. After a person has smoked for a year or two, he wishes that he had never started.
    4, 3, 2, 1, 0
71. If people knew the truth about cigarettes, they wouldn't smoke.
    4, 3, 2, 1, 0

BUREAU OF THE BUDGET. 68-R-936 EXP. 9-30-70

Strongly Agree	Mildly Agree	Neither Agree Nor Disagree	Mildly Disagree	Strongly Disagree
☐A	☐B	☐C	☐D	☐E

72. Smoking is a dirty habit.
    4, 3, 2, 1, 0
73. Filter cigarettes are safer to smoke than non-filter cigarettes.
    0, 1, 2, 3, 4
74. Cigarette advertisements should be checked by medical authorities before publication.
    4, 3, 2, 1, 0
75. Some teenagers smoke because it shows freedom from their parents and teachers.
    4, 3, 2, 1, 0
76. Cigarette smoking causes chronic bronchitis.
    4, 3, 2, 1, 0
77. Cigarette advertising should be banned from radio and television.
    4, 3, 2, 1, 0
78. Smoking hurts performance in athletics.
    4, 3, 2, 1, 0
79. There is a relationship between lung cancer and cigarette smoking.
    4, 3, 2, 1, 0
80. Teenagers smoke mainly because their close friends smoke.
    0, 1, 2, 3, 4
81. Smoking is related to heart disease.
    4, 3, 2, 1, 0
82. Parents should set a good example by not smoking cigarettes.
    4, 3, 2, 1, 0
83. Cigarette smoking is harmful to health.
    4, 3, 2, 1, 0
84. Smoking helps people when they feel nervous about something.
    0, 1, 2, 3, 4
85. One of the main reasons teenagers smoke is to be more like adults.
    4, 3, 2, 1, 0
86. If I were a parent, I would not let my teenage children smoke cigarettes.
    4, 3, 2, 1, 0
87. Teenagers smoke mainly because their parents smoke.
    4, 3, 2, 1, 0
88. Cigarette smoking can help to control overweight.
    0, 1, 2, 3, 4

WHAT TO DO:

When you have finished the survey, place the answer sheet inside the survey booklet and raise your hand. The teacher will then come and pick up the booklet.

BUREAU OF THE BUDGET. 68-R-936 EXP. 9-30-70

UNIVERSITY OF ILLINOIS SMOKING KNOWLEDGE TEST

GENERAL DIRECTIONS:

1. Please answer the questions as quickly as you can. Do not spend time puzzling over them. Give the first natural answer that comes to you. Some questions are similar, but no two are exactly alike, and your answers may differ in these cases.

2. Select the one best answer for each question or statement. You should finish the entire test within 25 minutes.

3. Please put your answers on the answer sheet to correspond with the question number.

4. All answers are to be marked in PENCIL. You may use any type of PENCIL to mark your answer sheet; you do not need a special pencil. Do NOT use ink or a ball-point pen.

5. Be sure that your marks on the answer sheet are clear and dark.

6. If you wish to change an answer, be sure to ERASE the old answer. Answer only ONCE to each question or statement.

7. In filling in your answers on the answer sheet, proceed from left to right, ACROSS the page, for example.

1. [A] [B] [C] [D] [E] 2. [A] [B] [C] [D] [E]

8. If you have any questions now or while filling out the survey, raise your hand, and your instructor will help you.

DO NOT OPEN THE BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Bureau of the Budget. 68-R-936 Exp. 9-30-70

REVISION OF THE
UNIVERSITY OF ILLINOIS SMOKING KNOWLEDGE TEST

1. A study of the smoking habits of American teenagers reveals that

   a. more teenagers than adults smoke cigarettes.
   b. more junior high students smoke than high school students.
   c. approximately 30% of all teenagers smoke cigarettes.
   d. more teenage girls than teenage boys smoke cigarettes.

2. Cigarette commercials no longer show professional athletes smoking. Which of the following is <u>not</u> true of cigarette advertisements?

   a. Cigarette advertisers sponsor athletic contests on T.V.
   b. Some athletes give testimonials against smoking for poster displays.
   c. Cigarette commercials include the health effects of smoking.
   d. Cigarette smoking is associated with participation in recreational activities.

3. The work load of the heart of a cigarette smoker is increased due to

   a. carbon monoxide reducing the oxygen carrying capacity of the blood.
   b. the acceleration of the clotting time of blood.
   c. increased thickening of the walls of the arterioles and small arteries.
   d. all of the above.

4. Surveys indicate that most teenagers smoke because they

   a. like the taste of tobacco.
   b. are rebelling against authority.
   c. want to belong to the group.
   d. say it calms them down.

5. Nicotine, an ingredient in cigarette smoke, is

   a. stimulating to the nervous system.
   b. depressing to the nervous system.
   c. both stimulating and depressing.
   d. neither stimulating nor depressing.

6. The reason most adult smokers would advise teenagers not to start smoking is that

   a. doctors are against smoking.
   b. it is unlawful for teenagers to smoke.
   c. cigarette ads do not give the whole truth.
   d. it is easier not to start than to give up smoking.

7. One reason scientists think cigarette smoking is a cause of lung cancer is due to the

   a. increased activity of the cilia of smokers.
   b. thickening of respiratory membranes of smokers.
   c. higher incidence of lung cancer among cigarette smokers.
   d. all of the above.

8. Which of the following is <u>not</u> true of coronary heart disease?

   a. Coronary heart disease is the leading cause of death.
   b. It kills 2½ times more smokers than lung cancer each year.
   c. It claims a majority of its victims in the 20-30 age group.
   d. It is a greater health hazard for smokers rather than non-smokers.

Please study the following table concerning the rate of smoking by sex and education. Use this information for answering question #9.

number of years of education	MALES (100%)			FEMALES (100%)		
	never smoked regularly	former smokers	present smokers	never smoked regularly	former smokers	present smokers
5 to 8	24.3	20.1	55.5	64.8	4.8	30.0
9 to 12	30.1	17.6	52.2	55.9	8.4	35.5
13 and over	36.3	22.6	41.1	53.7	12.0	34.1

9. The table given above does <u>not</u> indicate that

   a. the percentage of female smokers generally increases with an increase in education.
   b. a higher percentage of males than females smoke.
   c. the more highly educated females quit smoking more often than do the highly educated males.
   d. the percentage of male smokers generally decreases with an increase in education.

10. Emphysema in recent years has

   a. increased slightly for both men and women.
   b. increased moderately for men; remained unchanged for women.
   c. increased considerably for men and is increasing for women.
   d. remained the same for both men and women.

11. Metastasis relates to the

   a. thickening of the walls of the arteries.
   b. spreading of cancer cells to other parts of the body.
   c. destruction of the tiny air sacs of the lungs.
   d. result of poor circulation in the body extremities.

12. The percentage of high school girls who now smoke is

   a. shown to be gradually decreasing.
   b. progressively approaching that of high school boys.
   c. greater than that of high school boys.
   d. greater than that of adult women.

13. A disease characterized by a progressive reduction of blood flow to the extremities has long been recognized as due primarily to the use of tobacco. This disease is called

   a. Buerger's Disease
   b. bronchitis
   c. coronary heart disease
   d. emphysema

14. Most people continue to smoke because of

a. psychological factors
b. addiction to nicotine
c. physiological effects
d. aesthetic reasons

15. Cigarette smokers tire easily because

a. the lungs decrease in size.
b. dirt and dust cannot be filtered.
c. of inefficient gas exchange in the lungs.
d. the membranes loose their elasticity.

16. Which of the following best describes the effect of nicotine?

a. It dilates the blood vessels.
b. It constricts the blood vessels.
c. It has no effect on the blood.
d. Little is known on the subject.

17. The person <u>most</u> likely to get lung cancer is the

a. pipe smoker
b. cigar smoker
c. cigarette smoker
d. ex-smoker

18. Which of the following acts directly as a cleaning and filtering system for the lungs?

a. bronchi
b. cilia
c. trachea
d. alveoli

19. Approximately how many cigarettes does it take to affect the pulse rate?

a. one
b. five
c. ten
d. twenty

20. The "smoker's cough," a type of chronic bronchitis, is

a. the result of constriction of nasal passages of the smoker.
b. caused by irritation of mucous membranes of the respiratory tract.
c. due to the chemicals in the cigarette paper.
d. not really related to smoking.

21. The purpose of studying about smoking is to

a. create an awareness of health hazards.
b. present both sides of the issues.
c. help with individual decision making.
d. accomplish all of the above.

22. The pattern of cigarette smoking among women reveals that

a. more women than men smoke.
b. the number of women smokers has decreased.
c. approximately 30% of the women smoke.
d. women start smoking earlier than men.

23. The ingredient in cigarette smoke that is believed to be the cause of lung cancer is

a. nicotine
b. carbon monoxide
c. tobacco tars
d. charcoal

24. An immediate effect of cigarette smoking is the

a. dilation of the pupils.
b. increase in body temperature.
c. increase in blood pressure.
d. slowing down of pulse rate.

25. Smoking effects the diet by

a. leading to an increase in the appetite.
b. increasing the sensitivity of the taste buds.
c. decreasing the flow of gastric juices.
d. increasing the level of blood sugar.

26. Cancer is generally described as a (n)

a. inflamation of the membranes in the throat.
b. irritation of cells in the bronchi.
c. uncontrollable growth of abnormal cells.
d. break up of cells within the lungs.

Read the information concerning the following four teenagers and then answer questions 27 and 28.

Margaret [majority of her close friends smoke; boyfriend smokes]
Joyce [a few of her friends smoke; boyfriend, smoker]
Bill [neither father nor mother smokes; friends mainly non-smokers]
Donald [both father and mother smoke; friends mainly smokers]

27. The two teenagers <u>most</u> likely to become smokers are

a. Joyce and Margaret
b. Donald and Margaret
c. Bill and Joyce
d. Donald and Joyce

28. The two teenagers <u>least</u> likely to become smokers are

a. Bill and Donald
b. Margaret and Donald
c. Donald and Joyce
d. Joyce and Bill

29. A loss of elasticity of the tiny air sacs in the lungs is most characteristic of

a. Buerger's Disease
b. cancer
c. bronchitis
d. emphysema

30. Cigarette commercials do <u>not</u> include appeals to one's

a. emotional feelings
b. smoking pleasures
c. rational thought
d. sexual awareness

31. When compared to non-smokers, cigarette smokers tend to have

a. a greater life expectancy.
b. a shorter length of life.
c. the same mortality rate.
d. the same morbidity rate.

32. The walls of the blood vessels of cigarette smokers are apt to be

a. thinner than non-smokers.
b. thicker than non-smokers.
c. more brittle than non-smokers.
d. more elastic than non-smokers.

33. Unlike the tars in cigarettes, nicotine has the greatest effect on

a. respiration
b. circulation
c. digestion
d. excretion

34. In patients with emphysema

a. there is a paralysis of the alveoli.
b. cancerous growths appear in the lungs.
c. there is a decreased blood flow to the extremities.
d. air cannot flow freely out of the lungs

35. Through advertising, people are persuaded to buy certain brands of cigarettes because they

a. are under the subtle influence of suggestion.
b. identify cigarette smoking with social pleasures.
c. associate smoking with beautiful, sophisticated people.
d. are influenced by all of the above.

36. The reason most people fear lung cancer is because it is

a. the leading cause of death.
b. a permanent handicap.
c. nearly always fatal
d. difficult to diagnose.

The following boys are on the high school track team:

Rob . . . . . distance runner
Bill. . . . . discus thrower
Bob . . . . . sprinter
Paul. . . . . pole vaulter

37. Of the above athletes, the one whose performance will probably be <u>least</u> affected by smoking is

a. Rob
b. Bill
c. Bob
d. Paul

38. Of the above four trackmen, the one whose performance will probably be most affected by smoking is

a. Rob
b. Bill
c. Bob
d. Paul

39. One of the first serious effects of smoking is the

a. paralysis of the cilia.
b. lowering of the blood pressure.
c. tar that accumulates on the lips.
d. heat of the smoke in the lungs.

40. Studies have shown that many high school boys do not smoke because of their

a. awareness of the health hazards.
b. inability to afford the expense.
c. participation in athletics.
d. aesthetic considerations.

41. Cigarette smoking produces all of the following except a (n)

a. decrease in temperature in the extremeties.
b. reduction of the oxygen in the blood.
c. rise in the blood sugar level.
d. increase in body weight.

42. The body part most affected by pipe smoking is the

a. lungs
b. trachea
c. lips
d. bronchial tubes

43. As a result of regular cigarette smoking there is

a. an overall decrease in reaction-time.
b. a slowing of the blood flow through the capillaries.
c. an increase in the total vital capacity of the lungs.
d. an overall increase in the body's temperature.

44. The health hazards of cigarette smoking increase with

a. the number of cigarettes smoked.
b. the number of years a person smokes.
c. the amount of smoke inhaled.
d. all of the above.

DS,JS:mf

August, 1969

USE PENCIL ONLY. ERASE COMPLETELY WHEN NECESSARY.
MAKE YOUR MARKS FIRM AND CLEAR; EXAMPLE: A ■ C D E
COMPLETE THE NECESSARY IDENTIFICATION INFORMATION TO THE RIGHT.

UNIVERSITY of ILLINOIS ANSWER SHEET AB

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YOUR LAST NAME | FIRST NAME INI.

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C	MED.
D	EXT.
E	OTHER
F	
G	
H	
I	

COURSE: _____

INSTRUCTOR: _____

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SPECIAL CODES 1 2 3 4 5

TODAY'S DATE: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC | DAY | YEAR

SEX: M F

STUDENT NUMBER 1 2 3 4 5 6 7 8 9

Measurement and Research Division
Office of Instructional Resources
UNIVERSITY OF ILLINOIS

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104

113

Name: _____

GENERAL DIRECTIONS:

1. This is a survey being conducted by the University of Illinois and the U.S. Public Health Service.

2. This is not a test, nor will your answers be given to your instructors; the answers are only for research purposes.

3. There are no correct answers--only what YOU believe is important.

4. Answer by checking the space that most nearly represents what you believe. For example, if the item was "television" and you believe T.V. is good you would respond on the left-hand side according to how good you felt T.V. was. For example: 3 = very good, 2 = good, 1 = better than average, or bad on the right-hand side, 5 = worse than average, 6 = bad, 7 = very bad. The 4 would be neither good nor bad. Example given below:

Good /1 /✓2 /3 /4 /5 /6 /7 Bad T.V. is Good

Good /1 /2 /3 /4 /✓5 /6 /7 Bad T.V. is worse than average

5. Respond to the statements in the second part of the survey by checking how probable or improbable you feel a statement is.

6. Answer directly upon the survey.

Good Health	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Belonging to a Group	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Athletics	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Having Close Friends	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Heart Disease	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Becoming an Adult	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Relaxing Pastimes	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
My Children	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Harming People	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Parents	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Being Popular	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Death & Disease	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Long Life	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Coaches	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Pleasurable Activities	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Rules	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Decisions on Right & Wrong	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Grades	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Lung Cancer	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Principals	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad
Teachers	Good	/ / / / / / / / 1 2 3 4 5 6 7	Bad

Breaking Habits	Good	1 2 3 4 5 6 7	Bad
Enjoying Yourself	Good	1 2 3 4 5 6 7	Bad
School	Good	1 2 3 4 5 6 7	Bad
Deciding for Oneself	Good	1 2 3 4 5 6 7	Bad
Social Status	Good	1 2 3 4 5 6 7	Bad
Valuable Actions	Good	1 2 3 4 5 6 7	Bad
Cigarette smoking is harmful to health	Probable	1 2 3 4 5 6 7	Improbable
One of the main reasons junior high students smoke is to appear more mature	Probable	1 2 3 4 5 6 7	Improbable
Cigarette smoking shows a relationship to lung cancer	Probable	1 2 3 4 5 6 7	Improbable
Cigarette smoking is nice to do when you are enjoying yourself or having fun	Probable	1 2 3 4 5 6 7	Improbable
Some junior high students smoke because it shows freedom from their parents and instructors	Probable	1 2 3 4 5 6 7	Improbable
Cigarette smoking is something one should decide for oneself	Probable	1 2 3 4 5 6 7	Improbable
Cigarette smoking doesn't harm people	Probable	1 2 3 4 5 6 7	Improbable
Cigarette smoking will be discouraged in my children	Probable	1 2 3 4 5 6 7	Improbable
One of the main reasons junior high students smoke is to be part of the group	Probable	1 2 3 4 5 6 7	Improbable

Cigarette smoking helps a person to live longer	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking is an easy habit to stop	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking hurts athletic performance	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Junior high students smoke mainly because their close friends smoke	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking does more harm than good	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking is very pleasurable	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking has nothing wrong with it	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking makes a person popular	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking frequently causes death and disease	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking is a very relaxing pastime	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	
Cigarette smoking helps prevent heart disease	Probable	/ / / / / / /	Improbable
		1 2 3 4 5 6 7	

JCS November, 1968

RELIABILITY OF THE UNIVERSITY OF ILLINOIS
ATTITUDE-BELIEF SCALE

Delmar J. Stauffer

The University of Illinois Survey Instrument was administered to sixty tenth grade boys and girls who attended a suburban New York high school on Long Island. Reliability was determined by the test-retest method in which the same survey form was readministered within a four day time period. The coefficient of correlation was calculated by employing Pearson's product moment coefficient formula. The resulting coefficient of correlation for the instrument was .84.

APPENDIX C

Tables

TABLE 6

PERCENTAGE OF CURRENT SMOKERS BY AGE WITHIN GRADE
(ALL STUDENTS)

SEX AND GRADE	ABOVE MODAL AGE		UPPER 2 MONTHS MODAL AGE		MIDDLE 8 MONTHS MODAL AGE		LOWER 2 MONTHS MODAL AGE		BELOW MODAL AGE		TOTAL	
		Percentage		Percentage		Percentage		Percentage		Percentage		Percentage
	No.	Smokers	No.	Smokers	No.	Smokers	No.	Smokers	No.	Smokers	No.	Smokers
BOYS												
7th	602	25.9	227	12.4	1103	11.5	229	09.5	100	12.0	2261	15.3
8th	543	30.7	220	17.3	1110	13.9	233	15.1	121	14.1	2227	18.4
9th	529	38.2	203	18.2	1054	16.7	198	20.2	174	17.8	2158	22.6
10th	450	35.5	189	26.0	990	20.3	188	22.3	142	25.4	1959	24.9
11th	410	41.3	182	29.1	863	26.5	183	24.6	110	28.2	1748	30.3
12th	288	43.0	152	28.3	821	32.1	170	30.0	83	28.8	1514	33.5
TOTAL	2822	34.6	1173	21.1	5941	19.4	1201	19.5	730	20.5	11867	23.4
GIRLS												
7th	301	16.0	219	05.0	1270	07.1	300	04.7	135	03 7	2225	07.6
8th	292	19.1	208	10.0	1214	10.7	274	09.1	141	09.2	2129	11.5
9th	302	30.5	185	16.3	1278	11.4	261	07.6	160	08.8	2186	13.7
10th	237	32.0	182	16.5	1208	17.6	271	14.4	168	20.2	2066	19.1
11th	179	27.9	169	19.5	1013	19.9	226	20.4	120	20.0	1707	20.8
12th	120	30.8	152	34.8	915	23.6	243	28.3	114	32.5	1544	26.8
TOTAL	1431	25.1	1115	16.0	6898	14.4	1575	13.5	838	15.1	11857	15.9

TABLE 7

PERCENTAGE OF CURRENT REGULAR AND OCCASIONAL SMOKERS BY
GRADE, SEX AND ORGANIZED INTERSCHOLASTIC ATHLETIC PARTICIPATION

SEX AND GRADE	NO ORGANIZED ATHLETIC PARTICIPATION			ORGANIZED ATHLETIC PARTICIPATION			TOTAL		
		Percentage			Percentage			Percentage	
	No.	Reg.	Occ.	No.	Reg.	Occ.	No.	Reg.	Occ.
BOYS									
7th	1699	04.5	09.8	528	05.9	09.8	2227	04.8	09.8
8th	1494	07.2	11.6	697	05.3	11.0	2191	06.6	11.4
9th	1570	12.5	12.8	557	05.6	08.3	2127	10.7	11.6
10th	1449	15.9	11.9	488	04.9	09.8	1937	13.1	11.4
11th	1254	22.6	12.4	485	07.4	09.9	1739	18.3	11.7
12th	1086	26.9	12.9	411	08.5	06.8	1497	21.8	11.2
TOTAL	8552	13.8	11.8	3166	06.1	09.4	11718	11.8	11.2
GIRLS									
7th	1889	01.3	05.8	298	02.0	06.7	2187	01.4	05.9
8th	1842	02.4	08.8	243	01.2	08.6	2085	02.3	08.8
9th	1945	05.1	08.3	224	04.9	09.8	2169	05.1	08.4
10th	1875	07.1	11.6	155	07.7	12.3	2030	07.1	11.7
11th	1566	09.3	11.4	118	10.2	12.7	1684	09.4	11.5
12th	1441	13.6	12.9	83	13.3	16.9	1524	13.6	13.1
TOTAL	10558	06.1	09.6	1121	04.9	09.9	11679	06.0	09.6

TABLE 10

PERCENTAGE OF CURRENT SMOKERS BY GRADE, SEX, AND EDUCATIONAL EXPECTATIONS

SEX AND GRADE	DO NOT PLAN TO FINISH HIGH SCHOOL		PLAN TO FINISH HIGH SCHOOL		PLAN TO GO TO COLLEGE		PLAN TO FURTHER EDUCATION OTHER THAN COLLEGE		UNCERTAIN		TOTAL	
	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers
BOYS												
7th	45	53.3	496	23.8	1194	10.4	179	11.2	327	14.4	2241	14.9
8th	50	60.0	545	27.5	1131	11.8	185	12.5	297	21.1	2208	18.2
9th	53	71.7	556	33.4	1130	13.2	172	20.4	238	30.2	2149	22.3
10th	22	36.3	494	36.1	980	17.7	215	23.3	231	27.3	1942	24.3
11th	11	54.5	364	45.0	892	20.3	257	33.5	217	40.6	1741	29.1
12th	13	38.5	254	48.4	846	25.9	242	38.1	148	39.9	1503	33.2
TOTAL	194	56.2	2709	34.0	6173	15.8	1250	24.5	1458	26.8	11784	22.9
GIRLS												
7th	23	21.8	508	13.4	962	04.6	372	04.0	343	07.8	2208	07.2
8th	30	23.4	536	20.9	883	04.7	370	08.7	286	13.7	2105	11.0
9th	27	48.1	518	20.5	940	08.5	438	09.6	253	20.6	2176	13.5
10th	20	55.0	437	28.8	811	10.5	580	18.6	205	26.9	2053	18.7
11th	12	41.7	290	31.0	700	13.9	519	20.1	178	30.4	1699	20.6
12th	7	14.3	258	33.7	691	20.7	459	29.6	121	33.9	1536	26.5
TOTAL	119	35.3	2547	23.1	4987	09.9	2738	15.9	1386	19.4	11777	15.5

TABLE 8

PERCENTAGE OF CURRENT SMOKERS BY GRADE, SEX, AND TIME SPENT IN SCHOOL ACTIVITIES OTHER THAN ATHLETICS

SEX AND GRADE	NONE		LESS THAN 1 HOUR PER WEEK		1 - 2 HOURS PER WEEK		3 - 5 HOURS PER WEEK		OVER 5 HOURS PER WEEK		TOTAL	
	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers	No.	Percentage Smokers
BOYS												
7th	1391	16.2	258	15.1	258	10.1	202	12.9	121	13.2	2230	14.9
8th	1292	20.1	263	16.8	270	15.9	194	11.9	179	14.5	2198	18.1
9th	1294	27.2	249	18.5	207	16.4	195	13.9	201	11.0	2146	22.4
10th	1239	29.7	182	18.1	194	16.5	126	10.4	209	16.7	1950	24.6
11th	1016	37.5	215	25.2	179	19.0	155	18.0	173	16.2	1738	30.2
12th	749	40.5	205	29.3	188	29.8	133	22.5	227	22.0	1502	33.2
TOTAL	6981	27.0	1372	20.1	1296	17.4	1005	14.7	1110	16.0	11764	23.0
GIRLS												
7th	1152	08.3	363	06.3	452	06.0	155	05.2	71	05.6	2193	07.2
8th	981	14.8	316	09.5	464	08.6	247	05.4	76	05.3	2084	11.1
9th	951	20.0	364	09.3	470	08.3	278	07.9	111	08.1	2174	13.2
10th	777	29.4	322	13.3	555	13.0	288	12.1	113	06.2	2055	18.8
11th	529	34.2	263	16.4	433	15.7	282	13.1	195	12.3	1702	20.7
12th	402	37.3	217	29.1	359	23.4	290	22.8	268	16.8	1536	26.6
TOTAL	4792	20.6	1845	12.8	2733	12.1	1540	11.7	834	11.2	11744	15.6

TABLE 15a

RANK OF EFFECTIVENESS OF EXPERIMENTAL MESSAGES BY SEX

Message	Combined	Male	Female
Contemporary	1	1	1
Adult Role Taking	2	2	4
Authoritative	3	5	2
Control	4	3	3
Remote	5	4	6
Both Sided	6	6	5

TABLE 15b

t TEST OF SIGNIFICANCE OF DIFFERENCES OF CHANGES
IN SMOKING BEHAVIOR BY MESSAGES
(All Students)

	Adult Role Taking (9)	Authoritative (8)	Control (7)	Remote (10)	Both Sided (9)
Contemporary (9)*	2.09 (2.11)**	1.95 (2.12)	2.38 (2.13)	4.38 (2.10)	4.63 (2.11)
Adult Role Taking (9)		.21 (2.12)	.59 (2.13)	2.69 (2.10)	3.03 (2.11)
Authoritative (8)			.36 (2.15)	2.35 (2.11)	2.65 (2.12)
Control (7)				2.04 (2.12)	2.34 (2.13)
Remote (10)					.37 (2.10)

* The number of schools receiving a particular message is shown after each message.

** Since messages were given by schools, the number of schools was used instead of students to determine the degrees of freedom. The t .05 level needed for significance is given within the parentheses.

TABLE 15c

t TEST OF SIGNIFICANCE OF DIFFERENCES OF CHANGES IN SMOKING BEHAVIOR BY MESSAGES
(Males)

	Adult Role Taking (9)	Control (7)	Remote (10)	Authoritative (8)	Both Sided (9)
Contemporary (9)*	.59 (2.11)**	1.58 (2.13)	1.70 (2.10)	2.10 (2.12)	3.41 (2.11)
Adult Role Taking (9)		.93 (2.13)	1.08 (2.10)	1.48 (2.12)	2.75 (2.11)
Control (7)			.21 (2.12)	.65 (2.15)	1.98 (2.13)
Remote (10)				.43 (2.11)	1.69 (2.10)
Authoritative (8)					1.23 (2.12)

TABLE 15d

t TEST OF SIGNIFICANCE OF DIFFERENCES OF CHANGES IN SMOKING BEHAVIOR BY MESSAGES
(Females)

	Authoritative (8)	Control (7)	Adult Role Taking (9)	Both Sided (9)	Remote (10)
Contemporary (9)*	.48 (2.12)**	1.77 (2.13)	2.09 (2.11)	3.11 (2.11)	4.56 (2.10)
Authoritative (8)		1.13 (2.15)	1.43 (2.12)	2.49 (2.12)	3.93 (2.11)
Control (7)			.25 (2.13)	1.33 (2.13)	3.28 (2.12)
Adult Role Taking (9)				1.14 (2.11)	2.57 (2.10)
Both Sided (9)					1.35 (2.10)

* The number of schools receiving a particular message is shown after each message.

** Since messages were given by schools, the number of schools was used instead of students to determine the degrees of freedom. The t .05 level needed for significance is given within the parentheses.

TABLE 26a

TEST OF THE HYPOTHESIS THAT THE PROPORTIONS OF REGULAR SMOKERS AMONG THE BOYS AND GIRLS ON THE 1966 SURVEY ARE EQUAL

	BOYS		GIRLS		
	Number	Percent	Number	Percent	TOTAL
Regular	265	36.45	110	23.01	375
Occasional	462	63.55	368	76.99	830
TOTAL	727		478		1,205

$z = 4.93$ P .001

TABLE 27 a

CHI-SQUARE TEST OF ASSOCIATION BETWEEN REGULAR SMOKING AND GRADE LEVEL, AND REGULAR SMOKING AND SEX

Selected Analysis	df	Chi-Square
7th - 10th Grade Regular Smokers 1966	3	7.48
9th - 12th Grade Regular Smokers 1968	3	5.14
9th and 12th Grades Regular Smokers 1968	1	9.04*
1966 Regular Smokers by Sex	1	10.47*
1968 Regular Smokers by Sex	1	2.96
1968 Ex-Smokers or quitters by Sex	1	2.62

* Significant at .05 level

TABLE 39

SMOKERS AND NON SMOKERS IN MATCHED AND UNMATCHED SAMPLES

MALES

	7th GRADE				8th GRADE			
	MATCHED		UNMATCHED		MATCHED		UNMATCHED	
	No.	%	No.	%	No.	%	No.	%
SMOKERS	275	14.40	71	20.23	306	16.56	105	27.70
NON-SMOKERS	1635	85.60	280	79.77	1542	83.44	274	72.30
	$z = 2.79$ $P < .01$				$z = 5.10$ $P < .001$			

	9th GRADE				10th GRADE			
	MATCHED		UNMATCHED		MATCHED		UNMATCHED	
	No.	%	No.	%	No.	%	No.	%
SMOKERS	373	29.39	114	34.65	347	21.55	141	40.40
NON-SMOKERS	1456	79.61	215	63.35	1263	78.45	208	59.60
	$z = 5.69$ $P < .001$				$z = 7.38$ $P < .001$			

	11th GRADE				12th GRADE			
	MATCHED		UNMATCHED		MATCHED		UNMATCHED	
	No.	%	No.	%	No.	%	No.	%
SMOKERS	371	25.71	158	51.80	381	31.51	126	41.31
NON-SMOKERS	1072	74.29	147	48.20	828	68.49	179	58.69
	$z = 9.01$ $P < .001$				$z = 3.27$ $P < .01$			

	ALL GRADES			
	MATCHED		UNMATCHED	
	No.	%	No.	%
SMOKERS	2053	20.84	715	35.43
NON-SMOKERS	7796	79.16	1303	64.57
	$z = 14.12$ $P < .001$			

TABLE 40

SMOKERS AND NON-SMOKERS IN MATCHED AND UNMATCHED SAMPLES

FEMALES

	7th GRADE				8th GRADE			
	MATCHED		UNMATCHED		MATCHED		UNMATCHED	
	No.	%	No.	%	No.	%	No.	%
SMOKERS	135	6.97	35	12.15	168	9.33	77	23.40
NON-SMOKERS	1802	93.03	253	87.85	1632	90.67	252	76.60
	$z = 3.09$ $P < .01$				$z = 7.35$ $P < .001$			

	9th GRADE				10th GRADE			
	MATCHED		UNMATCHED		MATCHED		UNMATCHED	
	No.	%	No.	%	No.	%	No.	%
SMOKERS	232	12.17	68	24.29	308	17.71	85	25.99
NON-SMOKERS	1674	87.83	212	75.71	1431	82.29	242	74.01
	$z = 5.50$ $P < .001$				$z = 3.50$ $P < .001$			

	11th GRADE				12th GRADE			
	MATCHED		UNMATCHED		MATCHED		UNMATCHED	
	No.	%	No.	%	No.	%	No.	%
SMOKERS	304	20.32	52	24.64	319	24.56	94	38.37
NON-SMOKERS	1192	79.68	159	75.36	980	75.44	151	61.63
	$z = 1.45$ $P < .147$				$z = 10.46$ $P < .001$			

	ALL GRADES			
	MATCHED		UNMATCHED	
	No.	%	No.	%
SMOKERS	1466	14.41	411	24.46
NON-SMOKERS	8711	85.59	1269	75.54
	$z = 10.46$ $P < .001$			

APPENDIX D

Figures

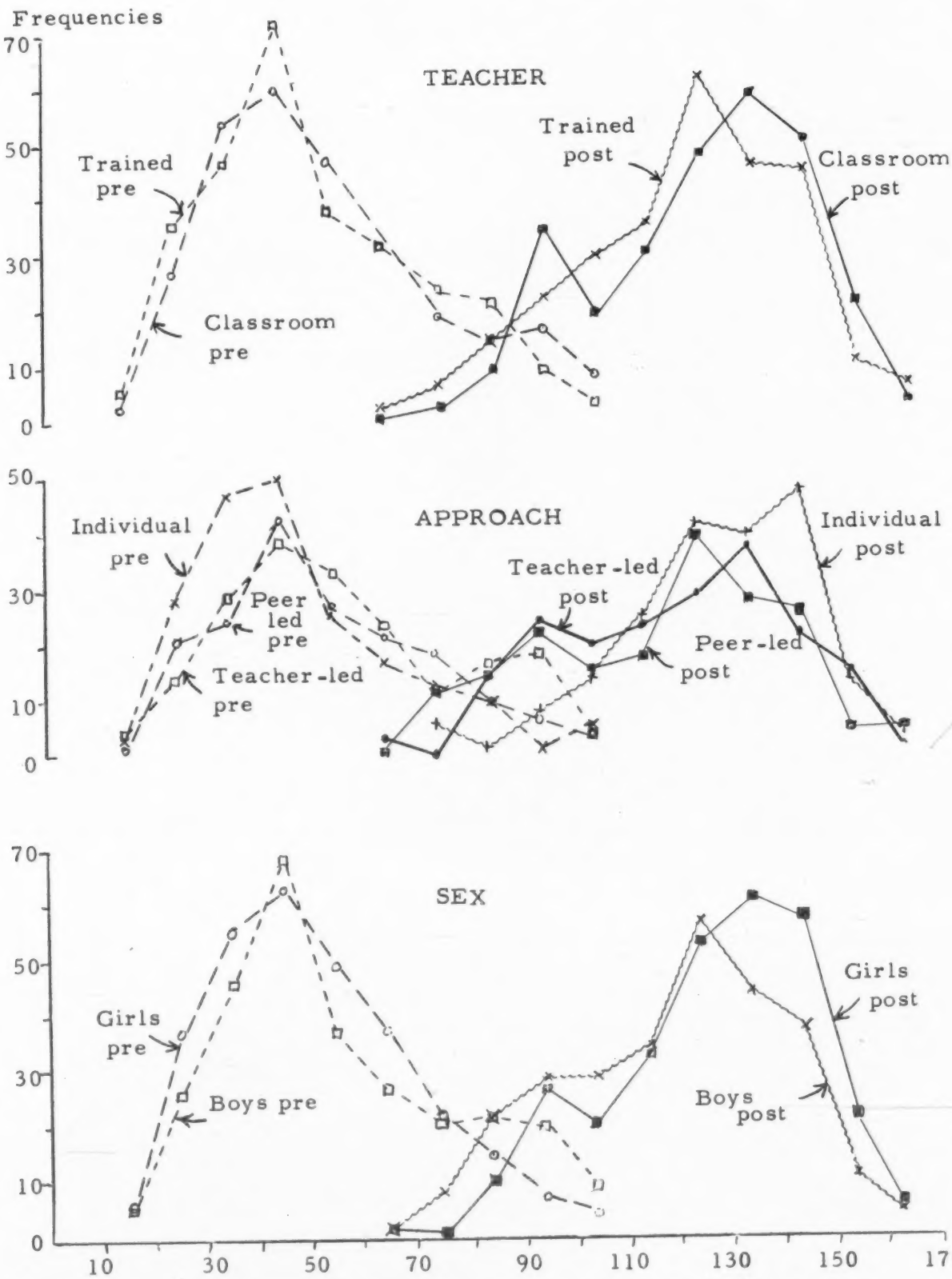


FIGURE 4. DISTRIBUTION OF THE PRE- AND POST-TREATMENT ATTITUDE-BELIEF SCORES

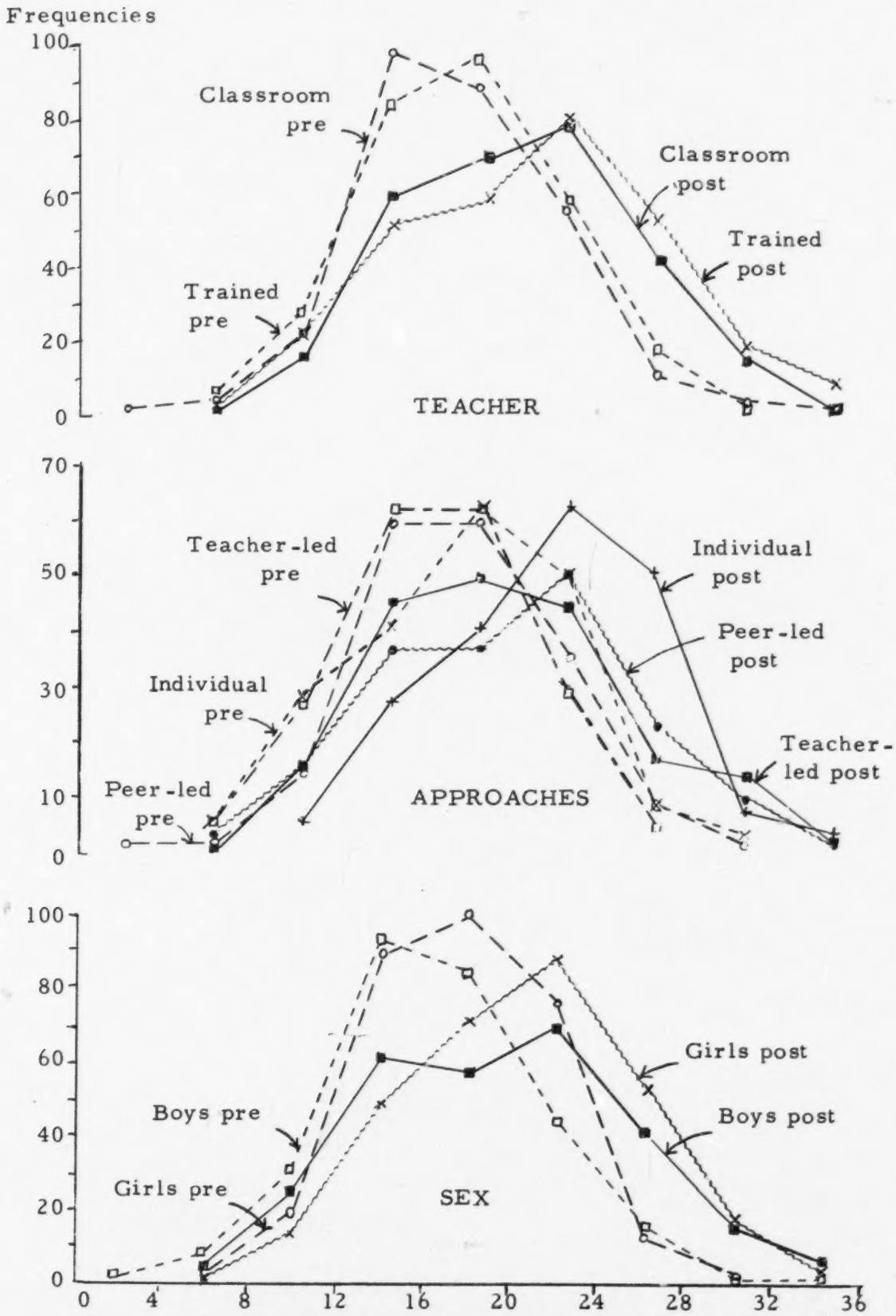


FIGURE 5. DISTRIBUTION OF THE PRE- AND POST-TREATMENT KNOWLEDGE TEST SCORES

APPENDIX E

Mass Communication Messages

Contemporary Message

" I S S M O K I N G I N ? "

There is no group in the United States which carries with it more interest than those people between the ages of twelve and twenty, often called adolescents, teenagers, or young adults.

The importance of teenagers in our world today cannot be overestimated. Recently Time Magazine voted our youth "the people of the year." You have a great future in business, science, sports, travel, education, and many other areas.

You are fast approaching adulthood and with the opportunities of the future will also come many decisions with which you will be faced. One of the decisions will be whether or not to smoke cigarettes.

Probably many of you have already smoked or are smoking. Your decision then is whether or not to continue smoking.

Our interest is to present some of the facts concerning smoking so that you will be better prepared to make a wise decision.

Remember! It is your decision.

Anyone who smokes can see the effects of the loss of wind when participating in sports activities such as football, basketball, swimming, hiking, and tennis. Participation in sports is fun and is good for you. Some may say that they know of people who play in sports activities and it doesn't seem to hurt them. Could it be that these people have a great amount of natural ability and this tends to hide the effects of smoking? We could raise the question: "How much better would they perform in sports activities if they didn't smoke cigarettes?"

Even if you are interested in sports, smoking may irritate your throat, may cause chronic cough, and cut down your appetite. It also leads to bad breath and yellow stains on your fingers and teeth.

This hardly makes smoking seem like the "in" activity that advertisers on TV and radio make it out to be. The picture of a group of nice looking young people having fun at a party and passing the cigarettes around, or a handsome young man and pretty young girl walking along puffing away in some quiet, peaceful western scene are all appealing to young people.

There is little doubt that this type of advertising attracts attention. It tries to associate smoking cigarettes with being popular, having fun, and being mature.

Every teenager wants to be popular, have fun and get rid of the "child" image. This is natural. Will smoking help you reach any of these goals?

Look around you. Are the people who are popular smokers? If some of them do smoke, are they popular because they smoke? Are the ones who are on the honor roll, on the athletic teams, who are class officers popular because they smoke? Do you have to smoke to be popular?

Money isn't everything and it probably doesn't seem like very much when you only dish out 30 to 35 cents at a time. If you would put away the money that you would spend for a pack of cigarettes each day, by the time you are 35 you would be able to buy a $2500 car and pay cash for it! Yes, the cigarette habit costs about $125 a year. Why chain yourself to this expensive habit? When I talk of "chaining" yourself to this habit of smoking, what does this mean? It means that cigarette smoking creates a dependence similar in some respects to narcotics. It is very hard for people to have a cigarette once in a while. Soon they are smoking more and more and then the habit is firmly established. And once it becomes a habit, it is tough to break.

A recent survey showed that one-half of all adults were dissatisfied with their habit, but felt they couldn't quit, or, if they did, they would get nervous or gain weight.

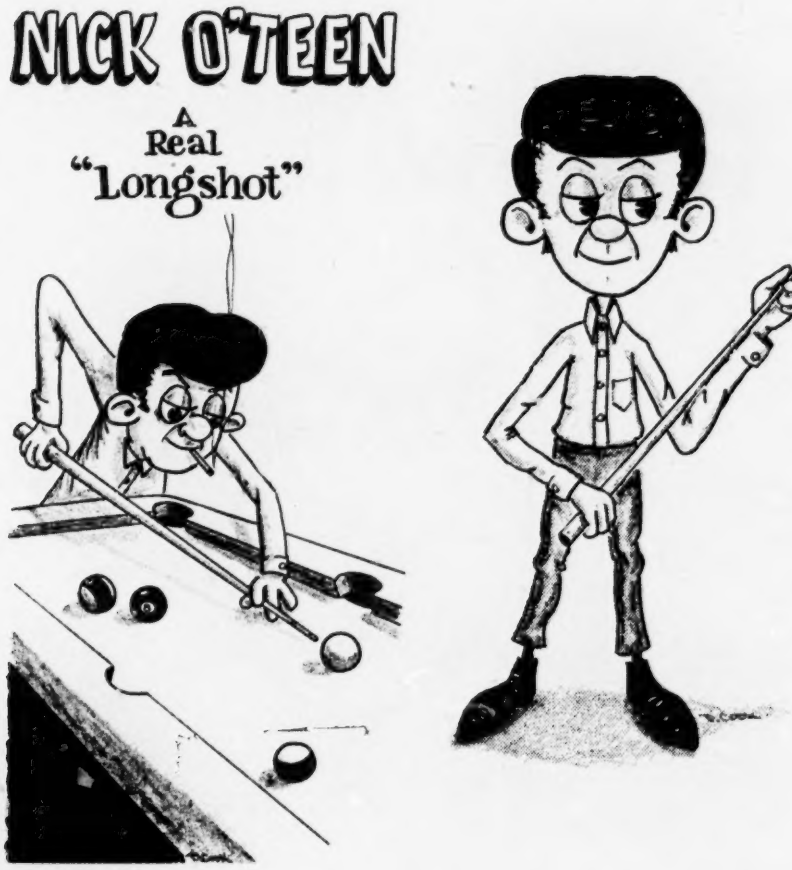
Studies like the one you are a part of have found that about one out of three teenagers smoke. Two-thirds of our teens have chosen not to smoke. Therefore, the "in" group seems to be the non-smokers!

Other studies show that the non-smokers as a group do better in school academically, participate more in athletics and extra-curricular activities, are more likely to go to college, appear on the honor rolls more often, and are less likely to be dropouts.

This doesn't mean that all non-smokers are good students, good athletes, and so on, nor does it mean that all smokers are poor students, non-participants in athletics and extra-curricular activities, and are school dropouts.

But, it does show that smoking is not as "in" as you might think. Where do you stand?

It's your decision.



Nick's a smoker.

So, he's a longshot, a bad risk. Cigarettes have put him behind the eight-ball.

Figures show his grades probably won't be as high as non-smokers.

Figures show Nick's less likely to be a leader in athletics or school activities.

Odds are, Nick won't live as long as non-smokers.

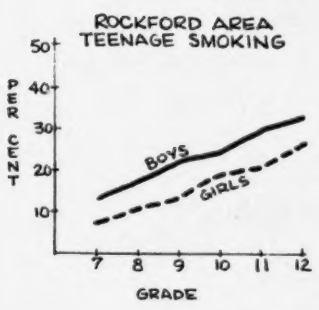
Take a cue from Nick. Don't be a longshot.

Don't smoke!

In the Rockford area:

Smoking's on the rise!

Heap bad signal!



It's true. About one-fourth of Rockford area teens smoke. No fork tongue! Nearly 5,000 teenage smokers!

There's nothing worse than a fagged-out brave with yellow teeth. Hard to find a squaw that way!

Smoking bad medicine.

meet:

NICK O'TEEN

Nick's really hurtin'.

His teeth are yellow, his breath's bad, his food doesn't taste so good, he can't hustle up a flight of stairs without getting winded, his throat's sore, and he coughs a lot.

Never used to be like that.

Until he started smoking.

meet:

NICK O'TEEN

Nick's a smoker. Maybe he smokes too much . . . and thinks too little.

He doesn't care that he's increased his chances of getting lung cancer 10 to 64 times.

He doesn't care that he's more likely to develop chronic bronchitis, heart disease, or emphysema.

He just keeps puffin'.

Chances are, you'll live a lot longer than Nick.

Aren't you glad you don't smoke?

NICK O'TEEN

A Real "Longshot"

Nick's a smoker.

So, he's a real longshot, a bad risk. Cigarettes have put him behind the eight-ball.

One million of today's school children will die of lung cancer by age 70. Chances are, Nick will be one of them.

Or maybe emphysema* or chronic bronchitis will get Nick. Those diseases have increased 900 per cent in the last 20 years.

Take a cue from Nick.

Don't be a longshot.

Don't smoke!

*Emphysema is a disease that gradually destroys the lung tissue.

Should you drag on?

SMOKING:
makes you feel like an adult.
is "in."
gives you pleasure.
relaxes you, and
may help you control weight.

SMOKING:
may endanger your health.
makes you short of breath.
yellows teeth and fingers.
causes bad breath.
can irritate your throat.
may be expensive.
and is habit-forming.

You decide.

Should you Monkey with Cigarettes?

Depends on your idea of "Swinging"

Smoking makes you feel "in." It can relax you, settle your nerves. Smoking gives you pleasure, and makes you feel like an adult. It may even help you control your weight.

But smoking is a "crutch" you don't need. It's habit-forming and expensive. Smoking irritates your throat and makes you short of breath. It can yellow teeth and fingers. Smoking can cause bad breath, and also may be a hazard to your health.

How about a banana?

Parents,

Coaches,

Doctors agree!

Most parents prefer that their teens don't smoke.

Coaches prohibit their players from smoking.

Most doctors advise "Don't smoke!"

Why all the concern?

It's to protect your health.

DON'T SMOKE!

DON'T SMOKE!

COACHES

Coaches know smoking can ruin an athlete. Cigarettes destroy stamina, endurance. Blood pressure increases. The heart overworks. A player can't do his best.

DOCTORS

Many doctors have quit smoking. They know the dangers, they understand the risk. They know disease and death can result from cigarette smoking. They advise, "Don't Smoke."

PARENTS

Parents know habits are hard to break. They know that the earlier smoking is started, the greater the health risk. Parents remind their children that it's illegal for minors to buy cigarettes.

Give the Old Folks the Word...

If your parents smoke, their chances of getting lung cancer are 10 to 64 times greater than parents who don't smoke.

If your parents are over 35, they're safer on our highways than sitting at home with a cigarette!

They can lower their chances of getting lung cancer by *quitting now!*

You can help them . . . give them the word!

Does your dad chain-smoke?

Give your folks the facts!

Do your parents know that smoking will cause ¼ million deaths this year?

Since your folks started smoking, lung cancer deaths have increased 10 times.

Death from emphysema* and chronic bronchitis have increased 900 per cent in the last 20 years.

Your parents can live longer by quitting now!

Give your folks the facts!

*Emphysema is a disease that gradually destroys lung tissue.

APPENDIX F

Teaching Unit

Table of Contents

Preface

Introduction to the Smoking Education Unit

Section A - Teacher Led Approach

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Section D - Materials for the Teaching Unit

Appendix - Completed Research--University of Illinois Ant-Smoking Education Study

Preface

This teaching unit was developed for use in an experimental study conducted by Robert P. Irwin in October, 1968. The experiment was designed to test the effects of three different educational approaches and teacher training on the smoking education of seventh grade students. Each of the approaches employed these same curricular materials and sequence of lessons. This was done in order to hold constant the influence of materials in all experimental groups while varying the educational approaches. The three approaches were developed to produce increasingly greater effects upon the student.

As implied in the title, the educational effect of the Independent Study Approach resulted from the student's own study and interpretation of the curricular materials. Those students assigned to the Peer Led Approach studied the same materials but presumably were also affected by the class discussions with their peers. Finally, the Teacher Led Apprcach combined the influence of materials, peer group, and teaching skill in an attempt to achieve the maximum educational effects.

The other major aspect of the study, teacher training, was evaluated by comparing the effectiveness of the regular classroom teacher with that of the teacher who had been trained in smoking education.

Introduction to the Smoking Education Unit

Several points must be considered in the introduction of a formal program for educating youth concerning the importance of non-smoking behavior. If such a program is to be undertaken by the schools, realistic answers must be offered to the age old pedagogic questions of the "what, when, and how" of such instruction.

The University of Illinois Youth Smoking Study has sought information to help answer such questions. With regard to the "when" of instruction, findings from the first phase of the study suggest that the junior high school age groups, especially the seventh grade level, may be the most effective time for starting an intensive educational program. Although some students have already started to smoke (boys 15 percent - girls 7 percent), to all practical purposes they are "experimenters" not yet caught up in a dependent habit of cigarette smoking. Their involvement with cigarettes seems to be at the level of curiosity and social group activity. The study data also indicates that the eighth grade level represents a critical point in the cigarette smoking experience for all students, and for boys in particular. It would appear that the period of experimentation is concluded at this time, and the student decides either to reject cigarette smoking or to move on to habitual smoking. Launching a program at a point in time when it can truly be preventive, should make the task of education an easier one.

As to the "what" of instruction, this experimental teaching unit was developed through use of the concept approach, as employed in many curriculum studies and particularly as formulated in the School Health Education Study[1] and in the report Health Concepts: Guides for Health Instruction.[2] The elements of this unit were developed from the general conceptual statement, "The Cigarette Smoking Habit is a Health Hazard of Sufficient Importance for Youth to Resist the Pressures to Smoke." Based upon this idea, five related sub-concepts were formulated from which the specific objectives, content, and learning activities were developed. These five central ideas or sub-concepts were arranged into a five lesson sequence for the teaching experiment.

In the development of this teaching experiment, an attempt was made to apply the principles identified in the health behavior studies of Hochbaum,[3] Rosenstock[4] and others. The sequence of lessons was arranged according to the steps outlined in Horn and Waingrow's[5] behavior change model. These steps are as follows:

a. An awareness of the threat
b. The acceptance of the importance of the threat
c. The relevance of the threat
d. The susceptibility of the threat to intervention

The objectives in each of the five lessons were written in a manner that communicated clearly the expected student behavior and the content to be learned. The findings from a series of related studies conducted under the auspices of the University of Illinois Youth Smoking Study* were used to determine the teaching-learning activities and the reference

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1 School Health Education Study, Health Education: A Conceptual Approach to Curriculum Design. St. Paul, Minnesota: Minnesota Mining and Manufacturing Company, 1967, 141 pp.

2 AAHPER, Health Concepts: Guides for Health Instruction. Washington, D. C.: AAHPER, 1967, 49 pp.

3 Hochbaum, Godfrey M., Public Participation in Medical Screening Programs. U.S. Department of Health, Education, and Welfare, Public Health Service, Publication No. 572. Washington, D. C.: Government Printing Office, 1958, 23 pp.

4 Rosenstock, Irwin M., "What Research in Motivation Suggests for Public Health." American Journal of Public Health, 50: 295-302, March, 1960.

5 Horn, Daniel and Selwyn Waingrow, "Smoking Behavior Change," Studies and Issues in Smoking Behavior (Zagona, ed.) Tuscon: University of Arizona Press, 1967, pp. 9-15.

* See Appendix for study references.

materials selected for the lessons. Included among these studies are: Merki's study using the symposium-discussion method; Newman's study of the social dynamics of youth smoking; Rupnow's experiment with educational materials; and the work of Schmidt, Alles, and Ladner on test instruments.

Lesson one calls attention to the total exposure of the population to the mass communication advertising messages designed to promote cigarette smoking. Major objectives of the lesson are to make youth sensitive to the omnipresence of these messages and to the distortions often presented in such communications. The lesson is designed to motivate youth through an appeal to a sense of self-mastery in making their own decisions about smoking. Students can understand that the advertising is designed to sell cigarettes. Distortions in the message imply that cigarette smoking is associated with being beautiful, succcessful, masculine, feminine, and healthy, but avoids specifically stating that these things are to be obtained through smoking. The adverse side of smoking is not shown.

Most youth of today know of the statistics associating smoking with higher death rates. However, lesson number two attempts to go beyond statistics, to personalize cigarette smoking as a cause of serious health problems. The lesson makes a direct appeal to the student's emotions and feelings. "Can you imagine how a man feels when he knows he is going to die? What will happen to his home and his family?" The student is asked to think about this while reading the two assigned articles. This lesson is designed to create the awareness of the threat, the first step in the behavior change process.

The third lesson focuses on the point that smoking produces an immediate and harmful effect upon the body. Anyone who inhales cigarette smoke begins to suffer these effects. Through the medium of the film, "The Embattled Cell," the student is treated as a mature young person who is capable of understanding this problem as it is studied through the eyes of a scientist, thus carrying out step two and three of the behavior change model.

The lesson together with the film and materials explains how the cells of the respiratory tract are affected when foreign substances are breathed into the lungs. The aim is to establish in the mind of the student the importance of this health problem and its relevancy to all who smoke.

Lesson four rests on the premise that before one can take effective personal action in preventing or in modifying smoking behavior, he needs to understand the social and psychological reasons that cause the initiating and the continuing of the smoking habit. These reasons are studied and balanced against the health hazards of smoking and also the detrimental effects upon athletic performance. An effort is made to help strengthen the student's position for non-smoking behavior.

The last lesson points out the fact that a great many people have quit smoking and that this decision is based upon a number of different reasons in addition to those pertaining to health. This concluding lesson of the unit attempts to enlist the student's commitment to the idea both in belief and in action that he can help solve the problems caused by smoking. Through a general classroom discussion, the teacher seeks to involve the student personally and to help him appreciate the fact that his own behavior influences others. He can help others by giving them support in resisting the pressure to smoke and in encouraging them to reduce the amount of their smoking. Students are cautioned against admonishing others about their smoking. The last two lessons seek to implement point four of the behavior change model -- the susceptibility of the threat to intervention.

Section A - Teacher Led Approach

Lesson - One

Concept - Cigarette Advertising Has A Significant Effect Upon an Individuals Attitudes Toward Smoking

OBJECTIVES	CONTENT TOPICS AND KEY QUESTIONS
1. The learner is aware of the extensive use of cigarette advertising. 2. The student can explain the types of influence or effect cigarette advertising has on him. 3. He (the learner) can identify the types of appeals that are made by cigarette advertising. 4. He can evaluate various types of cigarette advertising by means of a criteria, or he developes a criteria for evaluating cigarette advertising.	A. Types of Appeals That are Made By Cigarette Advertising on the Student 1. Beauty 2. Fresh Air 3. Relaxation 4. Status 5. Emotional--through music 6. Health 7. Appeal of the opposite sex B. Personal Effects of Cigarette Advertising 1. Feels strong 2. Feels part of the crowd 3. Feels relaxed 4. Feels happy 5. Feels handsome--beautiful C. Large Amounts of Money Spent on Cigarette Advertising 1. Cost of magazine ads 2. Money spent on T.V. advertising

SUGGESTED TEACHING AND LEARNING ACTIVITIES	CLASS MATERIALS
1. Introduce Lesson by Showing Class Ads a. Ask the students to analyze these ads to determine the type of appeals that are being made to the reader. b. What kind of an effect do these ads have on people? c. How do these ads affect you? d. Explain why the ads have the effects they do? 2. Ask the students to be alert to cigarette ads on T.V. and radio. 3. Ask students to bring ads to class from old magazines and newspapers, and to name or label the ad by the type of appeal. 4. Show the film "Too Tough to Care" a. What is the purpose of this film? b. What do you think about cigarette advertising after viewing this film? 5. Ask the class members to help develop a list of points or criteria that could be used to evaluate advertising. 6. Assignment for Lesson Two--ask the class to read the articles: "The Man Who Wrote His Own Obituary" "What the Cigarette Commercials Don't Show" NOTE TO TEACHER: Give each student a copy of the articles at the end of the class period.	A. For Students: 1. Cigarette ads from popular magazines 2. 10 Little Smokers--Tuberculosis Association 3. Cigarette Quiz--American Heart Association B. For the Teacher: 1. Article--"To the Cigarette Makers: Just the Facts Please" 2. Article--"An Ode to the Cigarette Code" C. For the Classroom Bulletin Board: 1. Poster--"Congress Has Acted the Next Step is Yours" 2. Newspaper Clipping--"Talman's T.V. Plea Against Smoking" 3. Poster--"Mark Waters Office"

Lesson - Two

Concept - Cigarette Smoking Frequently Causes Serious Illness and Death

OBJECTIVES	CONTENT TOPICS AND KEY QUESTIONS
1. The student can identify the serious diseases associated with cigarette smoking. 2. The student realizes that lung cancer is nearly always fatal. 3. The student understands that modern medicine has not yet developed an effective treatment of lung cancer. 4. The student understands that nearly all regular cigarette smokers suffer some degree of emphysema. 5. The student is aware of the suffering, hardship and tragedies that result when a member of the family contracts a disease such as lung cancer.	A. Disease and Cigarette Smoking 1. People who smoke are more likely to get lung cancer. 2. Other diseases associated with cigarette smoking a. Emphysema b. Bronchitis c. Heart and circulatory disease d. Cancer of the mouth, tongue and throat B. The Problem of Lung Cancer 1. Once a rare disease now 55,000 deaths each year. 2. Lung cancer is usually fatal, about 6 out of 100, or 1 out of 20 with lung cancer survive. 3. Modern medicine can do very little to cure lung cancer. C. The Effect of Lung Cancer on Families 1. Cost of hospitalization 2. Loss of family income 3. Possible loss of home and savings 4. Difficulty in caring for the ill person 5. Family tragedy with loss of loved one

SUGGESTED TEACHING AND LEARNING ACTIVITIES	CLASS MATERIALS
NOTE TO TEACHER: It is suggested that some form of class discussion be used to involve the students thinking and feeling about the problem portrayed by: "The Man Who Wrote His Own Obituary" "What the Cigarette Commercials Don't *Show*" You may wish to use one of the following forms for class discussion: 1. Symposium--discussion Ask three or four students to serve as members of a symposium panel. Each panelist is asked to give a two minute statement or reaction to either one or both of these articles. After each of the panelists has spoken, invite the class to enter into a general discussion. 2. If possible arrange the class in a circle. Call for class volunteers to offer their reactions to the assigned articles. Invite the class to enter into a general table discussion. 3. Have a member of the class read selected passages of the articles to stimulate class discussion. 4. Buzz session discussion--arrange the class into a series of small groups 5-6 students per group. Have them discuss two questions: 1. How did you feel after reading these two articles? 2. Assume that your father has such an illness, how would it affect your family? Questions to Consider in General Class Discussion 1. What was the attitudes of the persons who wrote these articles? 2. How had cigarette smoking affected their health? 3. How do you think the illness of these two men affected their families? NOTE TO TEACHER: Handout to each student a copy of the booklet: "Facts for Teenagers: Smoking, Health, and You" Assignment for Lesson Number 3, is to read this pamphlet and be prepared to discuss these following questions: 1. What were some of the conclusions of the Surgeon General's Report? 2. How does cigarette smoking affect the body? 3. How have medical scientists investigated the effects of cigarette smoking?	A. For Students: (Handed out in Lesson 1) 1. "The Man Who Wrote His Own Obituary"--Readers Digest Article 2. "What the Cigarette Commercials Don't Show"--Readers Digest Article B. For the Teacher: 1. The two Readers Digest Articles related to the students assignment. 2. Poster--"More Cigarettes More Lung Cancer" 3. Chapter Four, "Summaries and Conclusions" Smoking and Health (Surgeon General's Report) C. For the Classroom Bulletin Board 1. Rockford area bulletin

Lesson - Three

Concept - The Inhaling of Cigarette Smoke Has A Harmful Effect Upon the Body

OBJECTIVES	CONTENT TOPICS AND KEY QUESTIONS
1. The student can explain the structure and the function of the respiratory system. 2. The student can explain how cigarette smoke interferes with the functioning of the respiratory system. 3. The student understands the process of cell change that occurs when normal cells become cancer cells. 4. The student can explain the different types of medical evidence that shows a relationship between cigarette smoking and disease.	A. Structure of the Respiratory System 1. Mouth, Nose, Throat and Lungs 2. Trachea and Bronchial tubes a. mucus membrane b. cilia 3. Alveoli B. Functions of Respiratory System 1. Action of Lungs a. inhaling and exhaling b. Bellows action of alveoli 2. Mucus Membrane a. ciliary action b. mucus flow from ciliary action c. trapping foreign particles and carrying them out of the lungs C. Effect of Cigarette Smoke on the Respiratory System 1. Paralyzes cilia action--loses its cleaning action 2. Tars and other cancer causing agents to irritate cells of mucus membrane in lungs 3. Irritation to mucus membrane causes cell changes a. Hyperplasia--thickening--increased number of cells b. Metaplasia--cancer growth--change in nucleus of cell c. Metastasis--spread of cancer cells D. Effect of Cigarette Smoking on Athletic Performance 1. Irritates throat--coughing 2. Affects endurance 3. Slows reaction 4. Reduces appetite E. Medical Evidence 1. Labratory experiments--effects of cigarette smoke a. animals b. human beings 2. Autopsies--compare lung tissue of smokers and non-smokers 3. Population studies a. study records of people who die of lung cancer b. observe smokers and non-smokers over a period of years

SUGGESTED TEACHING AND LEARNING ACTIVITIES	CLASS MATERIALS
NOTE TO TEACHER· 1. Introduction to the Film: "The Embattled Cell" Before showing the film explain to the class that this film was actually developed in the research laboratory of Dr. Russell P. Sherwin, a medical scientist at the Unversity of Southern California. Dr. Sherwin had developed special techniques of studying the lung with the use of an electron microscope and with time lapse photography. Here the student will see live normal and cancer cells. Other very rare pictures will show how cells work to protect the body and what the tiny air sacs in the lungs look like. Questions for Discussion: a. What happens to the lungs when cigarette smoke is inhaled? b. Why do cancer cells differ from normal cells? c. How do cells clean the body and protect the body against disease? 2. Ask the class to comment on what they've learned from reading the booklet, "Facts for Teenagers: Smoking, Health, and You." a. What are the different types of medical evidence? b. What type of medical evidence is shown on the film, "The Embattled Cell?" 3. Ask the class to explain terms like, cancer, bronchitis, emphysema, hyperplasia, metaplasia, and metastasis. 4. Have the class to discuss the statement "athletes should not smoke because...."	A. For Students: 1. Booklet--"Facts for Teenagers: Smoking, Health, and You" 2. Film--"The Embattled Cell" 3. Diagram of cell changes B. For the Teacher: 1. Booklet--"Facts for Teenagers: Smoking, Health, and You" 2. American Medical Association statement "Cigarettes and Athletic Fitness" 3. Ruth and Edward Brecher--Smoking the Great Dilemma (Public Affairs Pamphlet, No. 361, 1964, pp. 28) 4. Smoking machine

Lesson - Four

Concept - Social and Psychological Factors are Important in the Development of the Cigarette Habit

OBJECTIVES	CONTENT TOPICS AND KEY QUESTIONS
1. The learner understands that the initiating of the smoking process is largely social and psychological in origin. 2. The learner is aware that the continuation of the smoking habit is dependent upon certain psychological and social factors. 3. The student is aware of the extent of cigarette smoking in the United States and the need to control the habit.	Why People Begin to Smoke? (Social and Psychological) A. Reasons given for starting the smoking habit. 1. <u>To be more attractive</u>--Girls: Alluring, sophisticated, companionable--Boys: Masculin, strong, he-man type 2. <u>To be more adult</u> 3. <u>For relaxation</u>--it "kills" time, something to do 4. <u>To be one of the gang</u> (conformity to the peer group) --popularity, to be "in" 5. <u>For "kicks"</u>--to be independent of the authority of home and school. To be "big"--"cigarette smoke can't hurt me." 6. <u>To impress others</u> 7. <u>Curiosity</u> 8. <u>To lose weight</u> Why do People Continue to Smoke? B. Reasons given for Continuing to Smoke Cigarettes (Psychological and Social Reasons) 1. <u>Stimulation</u>--such as getting started in the morning 2. <u>Addiction</u>--must have a cigarette after a certain amount of time 3. <u>A "negative crutch"</u>--to reduce negative feelings such as distress, fear, anger and nervousness. To bouster confidence 4. <u>Habit</u>--a behavior pattern he follows almost involuntarily--familiar routine 5. <u>Oral Satisfaction</u>--the satisfaction derived from something in the mouth 6. <u>Pleasurable relaxation</u>--to enhance positive feelings, such as after a good dinner 7. <u>Reward</u>--after passing a rough test C. The Status of Smoking in the Community 1. 42% of all adults smoke. 2. 1 million people stop smoking each year, but 1 1/2 million develops the habit each year. 3. The age at which smoking becomes a regular habit is lowering. For some people the habit becomes firmly established in the 8th and 9th grade. 4. In Winnebago County research showed that in the 7th grade--15 boys out of every 100 boys smoke. 7 girls out of every 100 girls smoke. (Smoking is not an "in" activity). Other results show that -- a. Less likely to be leaders in athletics b. Less likely to be participant in schools c. Less likely to be successful in school

SUGGESTED TEACHING AND LEARNING ACTIVITIES	CLASS MATERIALS
1. Introduce lesson by reviewing the medical aspects of the cigarette smoking hazard. a. Ask the student to state the immediate effects of smoking. b. What is the compounding effect of the continuation of cigarette smoking? c. What are the effects of cigarette smoking on athletic performance? 2. Ask the student to list reasons given for the taking up of the smoking habit. 3. Show the appropriate posters as a contrast to the answers. 4. Ask the students to identify the reasons depicted on the transparency/chart, for continuing the cigarette smoking habit. 5. Have the student read "Is Smoking In?" and discuss the following questions. a. Is smoking necessary for a successful life? b. Where do you fit into the social order in relation to cigarette smoking? c. Is the cigarette smoking habit difficult to break? 6. Assignment: "What a Doctor Tells His Own Kids About Smoking"	A. For Students: 1. Flyer--"Is Smoking In?" B. For Teacher: 1. Posters--"Smoking is Glamorous" and "We'll Miss You Baby" and "Smoking is Sophisticated" 2. Charts/Transparencies (6) 3. "Six Reasons for Smoking" 4. "Cigarettes and Athletic Fitness" (Section relating to reasons why teenagers smoke)

Lesson - Five

Concept - Solving the Problem of Cigarette Smoking Requires Concern, Understanding, and Action on the Part of the Individual and the Society

OBJECTIVES	CONTENT TOPICS AND KEY QUESTIONS
1. The student can explain the reasons why people smoke. 2. The student understands that there are several different reasons for stopping smoking. 3. The student understands that there are several ways that he can help solve the cigarette smoking problem. 4. The student willingly accepts responsibility in helping to solve the cigarette smoking problem.	A. The Problem of Cigarette Smoking 1. Advertising influences many to smoke 2. Cigarette smoking causes immediate harmful effects 3. Cigarette smoking may lead to serious health problems in later life a. lung cancer b. bronchitis c. emphysema d. heart disease B. There are many reasons why people smoke 1. social reasons 2. psychological reasons C. Why do some individuals stop smoking cigarettes? 1. The Exemplar Role 2. Economics 3. Esthetics 4. Self-Mastery 5. Health Factors D. What can you as an individual do to solve the problem? 1. You can develop a better understanding of the problem a. reasons for starting are not the same as continuing b. more difficult to stop after habit is formed 2. Recognition of how your behavior affects others a. a polite refusal to smoke influences others b. encourage others not to smoke or to reduce the amount of smoking (Don't Preach) 3. You can help your parents a. discuss the problems with them b. call their attention to new facts about smoking

SUGGESTED TEACHING AND LEARNING ACTIVITIES	CLASS MATERIALS
NOTE TO TEACHER: After a brief review on "What we've learned about the smoking problems," it is suggested that a general classroom discussion be devoted to: 1. "Why do people stop smoking" 2. "What can I do personally, to help solve the cigarette smoking problem?"	A. For the Students: 1. "Cigarette Smoking The Facts" 2. "What to Tell Your Parents About Smoking" 3. "What a Doctor Tells His Own Kids About Smoking" B. For the Teacher: 1. "15 Reasons Why You Should Not Stop Smoking" 2. "Horn and Waingrow--Some Dimensions of a Model for Smoking Behavior Change"

Section B - Peer Led Approach

Experimental Approach PEER LED STUDY

SUGGESTED TEACHING AND LEARNING ACTIVITIES

Lesson One

Note To The Teacher: It is suggested that the lesson be introduced by having the students work through the Cigarette Quiz to provide a common basis for class discussion. The information gained from the quiz should also provide the students with useful background information when studying other materials. You may wish to use one or more of the following suggestions to get the students involved in discussions:

1. Work in committee groups of 6 to 8 people; analyze the cigarette advertisements taken from magazines. Construct a list of the types of appeal used, to report to the class in discussion of the ads.

2. Have the students work in groups to develop criteria which could be used to evaluate the appeals employed in the various cigarette ads.

3. Work in groups to create counter advertisements for magazines, radio, and T.V. Take the "punch lines" and reverse the meaning.

Questions to Consider in Group and General Discussion:

1. What personal effect does cigarette advertising have on you?
2. What kind of effect do these ads have on people?
3. What kinds of appeals to cigarette ads utilize to sell their products?
4. What points should we consider in evaluating these ads?

Assignment for Lesson -- Two-- Ask the class to read the articles:

"The Man Who Wrote His Own Obituary"
"What the Cigarette Commercials Don't Show"

NOTE TO TEACHER: Give each student a copy of the articles at the end of the class period.

Lesson Two

Note To The Teacher: It is suggested that one of the following forms of class discussion be used to involve the students in thinking and feeling about the problem as portrayed by:
"The Man Who Wrote His Own Obituary"
"What the Cigarette Commercials Don't Show"

1. Symposium--Discussion

Ask three or four students to serve as members of a symposium panel. Each panelist is asked to give a two minute statement or reaction to either one or both of these articles. After each of the panelists has spoken invite the class to enter into a general discussion.

2. If possible, arrange the class in a circle. Call for class volunteers to offer their reactions to the assigned articles. Invite the class to enter into a general table discussion.

3. Have a member of the class read selected passages of the articles to stimulate class discussion.

4. Buzz session discussion -- arrange the class into a series of small groups 5-6 students per group. Have them discuss two questions:

1. How did you feel after reading these two articles?

2. Assume that your father has such an illness, how would it affect your family?

5. Role Playing. Where groups could act out the situations that the families of the two men who wrote the articles might have experienced.

Questions to Consider in General Class Discussion:

1. What were the attitudes of the persons who wrote these articles?

2. How had cigarette smoking affected their health?

3. How do you think the illness of these two men affected their families?

Lesson Three

Note To The Teacher: It is suggested that study groups be assigned before introducing and showing the film: "The Embattled Cell."

You may wish to use one or more of the following forms of class activity:

1. Ask the groups to review the different types of medical evidence from the booklet "Facts for Teenagers: Smoking, Health, and You." What type of evidence is shown in the film? Have the students prepare notes taken from the film for a panel discussion during the last part of the lesson.

2. Using the booklet "Facts for Teenagers: Smoking, Health, and You," break the class up into three groups. Have one group discuss some of the conclusions of the Surgeon General's Report. The second group may want to discuss how cigarette smoking affects the body and the third group may be concerned with the question of: "How have medical scientists investigated the effects of cigarette smoking?"

Other Questions that may be Considered for Group Discussion:

1. "Athletes should not smoke because ....."

2. How does the inhaling of cigarette smoking affect the lining of the trachea?

Lesson Four

Note To The Teacher: It is suggested that the students own personal involvement be carefully noted in this lesson.

You may wish to use one or more of the following forms of student activity:

1. Committee work. Work in groups of 8-10 students. Under the chairman's guidance build a list of the reasons given for starting the smoking habit. Use the article "Cigarettes and Athletic Fitness" as a guide. Have the groups report their list of reasons. Compare the lists with the posters, "Smoking is Glamorous" and "We'll Miss You Baby," as a contrast.

2. Buzz session. Discuss the handout "Six Reasons Why People Smoke." Write examples of incidents which explain the reasons for continuing smoking.

3. Panel discussion. Have the class read the handout: "Is Smoking In?" Select 4 students to serve as a reactor panel.

Questions to Consider in Discussion:

1. Is smoking necessary for a successful life?

2. Why is the cigarette smoking habit difficult to break?

Assignment for Lesson -- Five -- Read the statement "What a Doctor Tells His Own Kids About Smoking."

Underline the reasons for stopping smoking or not starting smoking which are indicated in the statement.

Lesson Five

Note To The Teacher: The emphasis of this lesson is to show that there are many ways that the students can help himself and others to solve the cigarette smoking problem. Handout the leaflet "Cigarette Smoking - The Facts" to initiate group discussion.

You may wish to use one or more of the following forms of class activity:

1. Class review. Using the leaflet "Cigarette Smoking - The Facts" assign several students to serve as leaders in reviewing the key points of the previous four lessons.

2. Class discussion. Discuss the reasons given for giving up the cigarette smoking habit.

3. Brainstorming. Have the groups present possible solutions to the problem of cigarette smoking in our country.

4. Round table discussion. Discuss ways in which the students can personally assist in solving the cigarette smoking problem. Each student should be encouraged to make a personal commitment.

Section C - Individual Study Approach

INDIVIDUAL STUDY

Lesson - One

INTRODUCTION: During the next five lessons you will make a study of the habit of cigarette smoking. This has developed many problems for our society. In the very near future you will have to make decisions on these problems for our nation.

The materials you will be receiving have been selected because a group of teenagers like yourself believe they have important information about this problem.

First, you should take the "Cigarette quiz" to test your knowledge about cigarette smoking.

Write down the number of the questions you found the easiest.

_____

Now compare the findings of the experts, reported in "10 Little Smokers," with your knowledge about cigarette smoking. Did you learn new facts from the quiz and from the pamphlet?

Write down the most important fact you have learned.

You may take these materials home to read. They are yours to keep. Put your name on each piece of material and bring them to class each day.

Now look at the cigarette advertisements from popular magazines provided by your teacher.

List the different appeals the ads make to the reader.

1. How do they encourage women to smoke?
2. How do they encourage students to smoke?
3. Do these ads make you believe that smoking will hurt your health?
4. How do the ads suggest that smoking will help you?
5. Do these ads give you a different feeling about smoking than did the materials you read?

Write down your answers to these questions.

Now check (✓) the magazine advertisements to see which appeals are made by the cigarette advertiser.

APPEALS

	(A) Status or Social Prominence	(B) Popularity or Business Success	(C) Appeal of the Opposite Sex	(D) Masculinity Strength	(E) Health, Fresh Air, Cleanliness	(F) Beauty	(G) Relaxation	(H) Part of the Crowd
Advertisement's Name								
1.								
2.								
3.								
4.								
5.								
6.								
7.								

Which appeal is the most important to you?
Write your answer here. _____

Does cigarette smoking help you achieve these appeals?

_____

Look for more cigarette advertisements in magazines, and watch the cigarette commercials on T.V., to see which appeal is used.

ASSIGNMENT FOR TOMORROW'S LESSON:

1. Read the two articles from the Readers's Digest, "The Man Who Wrote His Own Obituary," and "What The Cigarette Commercials Don't Show."

2. Underline in pencil important facts or statements.

Lesson - Two

INTRODUCTION: It is clear that cigarette smoking has had an important effect on the lives of the two men reported in the Reader's Digest articles.

A. What do you think their attitudes were when they wrote these articles?
   (a) "The Man Who Wrote His Own Obituary"

   (b) "What the Cigarette Commercials Don't Show"

B. How had cigarette smoking affected their health?

List other diseases that are associated with cigarette smoking.

(a)
(b)
(c)
(d)
etc.

Look at the poster "More Cigarettes More Lung Cancer." What does this show?

Consider these facts about lung cancer:

1. Once a rare disease, now 55,000 deaths each year

2. Lung cancer is usually fatal, about 6 out of 100 or only about 1 out of 20 with lung cancer survive

3. Modern medicine can do very little to cure lung cancer

C. How do you think the illnesses of these two men affected their families?

List of Effects

1.
2.
3.
4.
5.
etc.

ASSIGNMENT FOR TOMORROW'S LESSON:

Your teacher will give you a copy of the booklet "Facts for Teenagers: Smoking, Health, and You."

For tomorrow's lesson you should read the booklet and prepare to discuss the following questions:

1. What were the main conclusions of the Surgeon General's Report?
2. How does cigarette smoke affect the body?
3. How have medical scientists investigated the effects of cigarette smoking?

Lesson - Three

INTRODUCTION: We have looked at the results of some of the long-term effects of cigarette smoking. Let us now look at the more immediate effects of cigarette smoking on the body.

You have read about the medical evidence in your booklet "Smoking, Health, and You." Before discussing this evidence any further, your teacher will show you the film "The Embattled Cell."

The film was developed in the research laboratory of Dr. Russel P. Sherwin, a medical scientist at the University of Southern California. Dr. Sherwin developed the technique of studying living lung cells using the electron microscope and time lapse photography. You will see normal cells and cancer cells.

How does cigarette smoke affect the body? What happens to the lungs and the function of the cilia in the lungs?

FILM

The different types of medical evidence are:

(a) laboratory experiments
(b) autopsies
(c) population studies
(d) death rate statistics

What type of medical evidence is shown in the film, "The Embattled Cell?"

What is there in the composition of cigarette smoke which will effect the cells of our own bodies?

List some of the substances

1.
2.
3.
4.
etc.

Write down what happens to the lungs when cigarette smoke is inhaled? (See page 17, "Smoking, Health, and You")

Now read the handout of the American Medical Association statement on "Cigarettes and Athletic Fitness"

State the reasons why athletes should not smoke.

Lesson - Four

INTRODUCTION: Review the medical aspects of the cigarette smoking problem (see page 16, in "Facts for Teenagers: Smoking, Health, and You.)

What are the immediate effects of cigarette smoking?

List these immediate effects:

1.
2.
3.
4.
etc.

What are the effects that may occur from many years of cigarette smoking? List these effects:

1.
2.
3.
4.
etc.

Despite the fact that smoking may cause serious illness and death, many people continue to smoke. Also, about 1 1/2 million more people start smoking each year.

What reasons do people give for taking up the cigarette smoking habit?

List these reasons

1.
2.
3.
4.
5.
6.
7.
8.
etc.

Check the reasons you have given with those on page 8, in "Smoking, Health, and You," and those in "Cigarettes and Athletic Fitness." What other reasons can you add to your list above.

What are the reasons given for continuing the cigarette smoking habit? Look at the handout "Six Reasons Why Smokers Smoke."

Write an example for each reason

1. Stimulation

2. Addiction

3. A "negative crutch"

4. Habit

5. Oral satisfaction

6. "Pleasurable relaxation"

Are there other reasons for continuing to smoke?

Now read "Is Smoking In?." As a guide to your reading consider the following questions.

(a) Is smoking necessary for a successful life?

(b) How do you feel about cigarette smoking after reading this information?

(c) Is the cigarette smoking habit difficult to break?

ASSIGNMENT FOR TOMORROW'S LESSON:

Before tomorrow's lesson read "What a Doctor Tells His Own Kids About Smoking." Underline the important ideas that the doctor mentions.

Lesson - Five

INTRODUCTION: You have been studying the problem of cigarette smoking. You have been asked to consider that:

1. Advertising influences many people to smoke.

2. Cigarette smoking causes immediate harmful effects.
3. Cigarette smoking may lead to serious health problems in later life, for example:

   (a) lung cancer
   (b) bronchitis
   (c) emphysema
   (d) heart disease

4. There are many reasons why people start to smoke and other reasons why they continue to smoke cigarettes.

What then are the reasons why some people stop smoking cigarettes.

Some of the reasons why people stop smoking are given in your leaflet "Cigarette Smoking: The Facts."

Economic reasons
Esthetic reasons
Self-mastery reasons
Health reasons

The Exemplar Role: Now, read your leaflet "What to Tell Your Parents About Smoking." Start at the second paragraph under the heading "A Message to Parents."

Do you tend to follow the example of your parents, older brothers and sisters, and your friends, or do you think about these problems and make your own decisions?

What can you do to help solve the problem?

1. Can you understand the reasons for starting smoking, and do you know of the difficulty of stopping after the habit is formed.

2. Do you recognize that your actions influence others. Your refusal to smoke shows your independence. You can encourage others not to smoke, but remember don't preach, the habit is difficult to break.

3. Write down some of the ways that you could help people give up the smoking habit, for example:

   (a) discuss some of the problems

   (b) call attention to new facts about smoking

   (c)

   etc.

Write your name on these materials and keep them for reference. Watch for new information. Have your opinions about cigarette smoking changed; will they change in the future?

Section D - Materials for the Teaching Unit

MATERIALS USED IN THE EXPERIMENTAL EDUCATIONAL APPROACHES

KEY: T = Material for teacher use

S = Material for distribution to students

C = Material for display in the classroom

Lesson - One

T Blum, Sam. " An Ode To The Cigarette Code." Harpers Magazine, March 1966. 60-63p.

T Miller, Lois Mattox and James Monahan. "To The Cigarette Makers: Just The Facts, Please." Reader's Digest, November 1966. 61-67 pp.

S "10 Little Smokers." Imagination Inc., 4032 Maryland Avenue, North Minneapolis 27, Minnesota. (pamphlet)

S American Heart Association. "Cigarette Quiz." New York: The Association, 1967. (pamphlet)

T/C American Cancer Society. "Congress Has Acted. The Next Step Is Yours." The Society, 1966. (poster No. 2123)

T/C American Cancer Society. "I Don't Smoke Cigarettes." The Society. (series of pamphlets -- No's. 2112, 2113, 2119, 2120, and 2124)

S Waters, Mark. "The Man Who Wrote His Own Obituary." Reader's Digest, July, 1966.

C American Cancer Society. "Mark Waters Was A Chain Smoker. Wonder Who'll Get His Office?" The Society. (poster)

C/S Associated Press. "Talman's T.V. Plea Against Smoking." (newspaper clipping)

S Mooney, Hugh J. "What The Cigarette Commercials Don't Show." Reader's Digest, January, 1968.

Lesson - Two

T American Cancer Society. "More Cigarettes, More Lung Cancer." The Society, 1967. (poster No. 2100-LE)

S Children's Bureau. "Smoking, Health, and You: Facts for Teenagers." Washington: U.S. Department of Health, Education, and Welfare, 1968. 23 pp.

Lesson - Three

T/S American Cancer Society. "The Embattled Cell." The Society. (film)

T American Cancer Society. "Facts About the Film -- The Embattled Cell." The Society. (folder)

T/C American Cancer Society. "Cigarettes Cause Disability, Disease and Death." (poster)

S University of Illinois Anti-Smoking Education Study - (UIASES). "Changes in The Cells Lining, The Trachea." Champaign-Urbana: The Study, 1968. (diagram)

T Brecher, Ruth and Edward. "Smoking The Great Dilemma." New York: Public Affairs Committee, Inc., 1964. 28 pp.

T/S National Federation of State High School Athletic Association and The Committee on the Medical Aspects of Sports of the American Medical Association. "Cigarettes and Athletic Fitness." JOHPER, October, 1967.

Lesson - Four

S UIASES. "Is Smoking In?" Champaign-Urbana: The Study, 1968. (flyer)

C American Cancer Society. "Smoking Is Very Sophisticated." "Smoking Is Very Glamorous." The Study. (posters)

C American Cancer Society. "We'll Miss Ya, Baby." The Society. (poster)

T/S UIASES. "Six Reasons The Smoker Smokes." The Study. (posters, transparencies, or flyer)

Lesson - Five

S National Tuberculosis and Respiratory Disease Association. "Cigarette Smoking: The Facts." The Association. (pamphlet)

S American Heart Association. "What To Tell Your Parents About Smoking." The Association, 1966. (pamphlet)

S Montgomery, Robert R. "What A Doctor Tells His Own Kids About Smoking." Changing Times, The Kiplinger Magazine. September, 1964.

T Smoking Research/San Diego. "15 Reasons Why You Should Not Stop Smoking." Smoking Research, 440 Upas Street, San Diego. (pamphlet)

T Horn, Daniel, and Waingrow, Selwyn. "Some Dimensions of a Model For Smoking Behavior Change." Paper presented at the 93rd Annual Meeting of the American Public Health Association in Chicago, Illinois, October 20, 1965.

Some of the materials were used in more than one lesson, but are listed in the sequence in which they were first used.

Additional Material For Teacher Use

U.S. Public Health Service, (Chapter 4) Smoking and Health, Report of the Advisory Committee to the Surgeon General of the Public Health Service. Washington, D. C.: U.S. Department of Health, Education, and Welfare, Public Health Service No. 1103. 1964. Reprinted by The American Cancer Society, Inc., New York, 1966. No. 2019. 24 pp.

McGrady, Pat. Cigarettes and Health. New York: Public Affairs, Committee, Inc. 1960. 20 pp.

APPENDIX G

Participant Observation As A Technique For Generating New Hypotheses

PARTICIPANT OBSERVATION AS A TECHNIQUE FOR GENERATING NEW HYPOTHESES

Ian M. Newman and Henry B. Slotnick

The University of Illinois Anti-Smoking Education Study focused, in its main thrust, on a large amount of data gathered through survey questionnaire techniques. This technique is based on the assumption that the investigator is able to formulate questionnaire items encompassing all meaningful responses and is, therefore, dependent upon either prior knowledge of the subject's entire range of possible responses or assumptions concerning potential responses. In instances where the particular topic being studied has been subject to long and intensive study, this technique may be justified. However, for topics on which comparatively little research has been done, or which deal with populations which have not been adequately described, it has serious limitations. Primary among these is the limitation of questionnaire surveys to obtain fresh data, as the very nature of questionnaire items tends to circumscribe the responses a priori. To overcome these limitations, the Study sought a supplementary approach to provide possible new insight into the behavioral dynamics related to smoking. For this alternative approach the staff turned to participant observation, supplemented by additional objective measures.

Participant observation is, in general, an unobtrusive technique dependent upon the establishment of rapport between the investigator and subjects, under study. The investigator becomes intimately involved with the social dynamics of the community which he is studying, sees the topic of his study in its social context and has opportunity to gather data which is not constrained on an a priori basis. Employing this rationale, and assuming the establishment of sufficient rapport with subjects it was projected that considerably more could be learned about the social forces influencing adolescent cigarette smoking. Inasmuch as cigarette smoking in most schools is "illegal," it is obvious that much smoking behavior is unobserved and factors relating to it are as yet unknown.

Accordingly, one member of the study team spent an academic year as a participant observer in an urban junior high school in an attempt to document the dynamics of the smoking act. This chapter discusses the dynamics of the smoking act. This chapter discusses the methodology of participant observation as utilized in that experience.

The General Approach of Participant Observation

The stated purpose of participant observation is to gather minimally distorted data regarding the behavior patterns of a given group.[5] In this context minimally distorted data means that the observer consciously attempts to subordinate differences between his frame of reference and that of the students in an attempt to minimize inappropriate interpretations of the observed behavior patterns.[8] The elimination of distortion is accomplished through the participant observer's systematic "sharing activities" with the observed group. Through sharing, the observer strives to internalize the group's value system while remaining emotionally uninvolved.[2] In this instance, since the investigator was not a smoker, there were certain limitations to the types of behavior he could share. Similarly, the age differences precluded certain types of sharing. However, it was found that once trust was developed the investigator was allowed to share in many experiences with the study subjects which other school personnel were never privileged to observe. For example, the investigator was able to observe smoking behavior in washrooms and behind trees, while conversing with the adolescents involved, and be reasonably confident that the subjects involved were not modifying their behavior as a result of the investigator's presence.

In participant observation, both overt acts and value systems (of which these acts are manifestations) are described. Therefore, the participant observer must be accepted by the target group, in this case adolescent cigarette smokers, to a degree that it will feel free to provide reliable and valid data; and the participant observer must realize his position within the group. Acceptance by the target group implies that the participant

observer is not preceived as a threat, which in turn means (1) that he must play an acceptable role in the group and (2) that he must behave in general according to the standards of the group and in particular to the standards of the segment in which he is most intimately involved.

For example, in order to study cigarette smoking among adolescents, the trust of the group must first be gained. For the purpose of this research, the investigator was identified as a member of the school's pupil personnel services, who was studying American junior high schools. His unique function was to gain information from the students, rather than from the teachers or administrators. However, the investigator had to overcome his status as an adult and an educator, in order to establish his role of a participant observer, to whom the students could confidently relate. As time went on and students began to realize that the investigator did not act as a teacher, i.e., discipline or report wrong-doings, they began to reveal information and actions usually shielded from the teaching faculty. As rapport and trust increased, so did the amount and variety of new data available. The investigator played a meaningful role as counselor and confidante for the target group and functioned as such, as he gathered data.

Alternative Roles for the Participant Observer

The personality of the investigator, the subject under study, and the type of population all influence the actual methods used by the participant observer. Gold[4] distinguishes four types of field workers: the complete participant, the participant-as-observer, the observer-as-participant, and the complete observer. The complete participant does not make his true intentions known to the community he is studying, while all others are known to the target group as field researchers. This means that the complete participant is the only kind of field researcher who cannot use structured techniques to gather data. The participant-as-observer makes his intentions known to the community and develops relationships with the informants over time. While the community may initially be wary and mistrust the field worker, prolonged contact removes initial uneasiness. The observer-as-participant is the field worker who limits himself to one-shot interviews. He is similar to the participant-as-observer in that his intentions are known to the target group, but differs from the former in that he does not attempt to personalize his relationships with informants. The complete observer differs from the preceding three types of field workers in that he has no contact with members of the community. He strives to be unobtrusive and thrives on rooms with one-way mirrors. In this particular study the investigator's role could best be described as participant-as-observer.

The assumption of a role by the participant observer defines the data available to him and puts him in intimate contact with certain portions of the target group, while reducing his contacts with others. In studying adolescent cigarette smoking, the partipant-as-observer (pupil personnel services counselor) created a situation in which it was "natural" to ask adolescents (the target group) many questions. However, to maintain the rationale that the principal method of study was via the students, the investigator was obliged to limit his contacts with the faculty. Early in the field work it was noted that students became hesitant to converse with the observer about matters not normally discussed by teachers and students, i.e., cigarette smoking, if the investigator was seen frequently in the company of other teachers. His role as investigator, including his professed confidentiality, became confused with the role of the other adults in the school, the teachers, to whom certain information was never revealed.

Data Gathering

In general, the alternative methods of data gathering techniques used in participant observation research can be classified under one or more of the following headings: (1) interviews with informants, usually informal and unstructured; (2) observations of events, including formal and informal, regular and unusual occurrences; (3) collection and examination of artifacts, including documents, and (4) participation in events in the community. All of these methods were used in the present study of adolescent cigarette smoking.

Informants used by a participant observer determine the type of data available. To consider this point, a definition of "informant" is necessary. Paul[7] described the informant as a member of the community who enters into a personalized relationship with

the participant observer. "Personalized relationship" means that the informant feels free to discuss aspects of the group freely with the participant observer and that he trusts the participant observer and sees him as neither a threat to himself nor to the group of which he is a part. Lundberg[6] sees the informant-participant observer relationship as one in which both parties are rewarded for their efforts. The informants benefit either materially (as a paid informant) or psychologically (as a new friend or confidante), and the participant observer receives information.

Campbell[3] has suggested that the informant can be considered in two distinct manners. First, he can be seen as independent, from the population represented by the group being studied. This concept suggests that the information provided by any given informant would be the same as that given by any other informant. That this situation is not always realized suggests that the concept is not an accurate one.

The second concept is that informants are integral members of the group who are performing a function in the group and have information about it. This concept explains differences between the data provided by different informants more effectively. Adoption of this point of view requires that the participant observer properly identify the informant's role in the group in order to determine his actual frame of reference. In the present research the informants (study sample) were selected on a random basis, since the objective measures utilized depended for validity upon a random sampling.

Perhaps the most important function the informant serves is to provide an internal (to the group) perspective of observed events. By comparing the perceptions of an informant with his own, the participant observer can see how the intuitive concepts he is using match those of the group. In this way the participant observer can attempt to internalize group value systems. The fact that non-smokers, for example, derived some pleasure from seeing smokers outsmart the school authorities and would even assist the smokers to do so, was only fully understood with the aid of informants who represented the feelings of both smokers and non-smokers.

A second function of the informant is to help put group occurrences as seen by the participant observer into their proper perspective.

Finally, the participant observer can use informants to objectify his own observations. He uses the informants to determine the degree to which the participant observer's presence in the group modified their behavior. In this study of adolescent cigarette smoking in an urban junior high school, it was particularly important to determine what effects the participant observer had on the group behavior being observed. Inasmuch as a considerable amount of smoking behavior took place in private areas, such as washrooms, only after the participant observer was fully accepted could he observe what actually happened. The acceptance process, and what went on prior to his admission, was something that could only be learned about through second-hand information, or from secondary sources.

There are several dangers involved in the use of informants. First, the informants initially contacted are often marginal types. These individuals may be misfits, intellectuals, or otherwise adventurous types, and association with them may mean that the participant observer will limit his contact with other members of the community. As previously noted, in this study, contact with teachers tended to preclude contact with students. Similarly, close association with youngsters classed by their peers as "hoods" tended to preclude association with those young people described as the "popular kids."

A second and very important type of problem is that of over-rapport. Briefly, there are two dinstinguishable types of over-rapport. First, informants may develop a researcher frame of reference. This means that the informant begins to do the researcher's job in editing the kind of data he provides for the participant observer. The research then takes the direction the informant feels is important, rather than the direction desired by the participant observer. The second type of over-rapport occurs when the participant observer over-identifies with the target group. This results in problems ranging from loss of objectivity to "going native."

The kind of data available to a participant observer results from the degree of acceptance he enjoys from the community. The interpretation of the data is partly a function of the participant observer's skill in internalizing the value systems of the target population and partly a function of the way the participant observer is accepted by the group. As the investigator is able to observe and participate in more of the group's activities, he tends to observe these directly through his own eyes, and also indirectly through the perceptions reported to him by others. In other words, the participant observer's descriptions are based increasingly on his newly learned concepts resulting from his understanding of the target group, and less and less through

the concepts of his own culture. Interpreting the actions of cigarette smokers in the junior high school setting required the learning and/or acceptance of the adolescent value system.

In this manner, after some months of field work, it became apparent that cigarette smoking among junior high school students, during school hours, was not enjoyed for the actual taste or sensation of the act of smoking. The more skill and cooperation that was needed to avoid being apprehended for smoking, the greater became the "pay-off" for the smoking act. The "pay-off" in this game of outsmarting the teachers was achieved through personal feelings of success and also from the acclaim received from peers.

The study of artifactual and document materials often adds significantly to other findings from field investigations. In this research document materials supported hypotheses developed through field work. Adolescent male cigarette smokers, for example, received lower grades but did not have lower IQ's. Observation of the complex strategies for avoiding teacher detection of the smoking act suggests that smokers, despite their low academic achievement, were certainly not stupid. Instead their behavior could often be considered as shrewed and clever.

The Recording, Analysis, and Interpretation of Data

In participant observation research, the analysis and interpretation of data can best be described as sequential; the data is analyzed as it comes in and is used to verify the problem and refocus the investigation. Becker[1] has indicated that the possible consequences of this types of analysis and interpretation are that later data gathering takes its direction from earlier data gathering, and that provisional analyses are carried on while data is still being gathered. As a result, this process is most flexible in initial work with populations about which very little is known.

However, in considering the ways in which participant observers record their perceptions of observed events, it should be remembered that these perceptions are gained from the observer's point of view, and that the particular set of concepts used only approaches those of the target group as the participant observer's descriptions begin to take on the character of those of members of the target group. This is a result of having internalized the group's value system, which allows the participant observer to think like a member of the target group. Thus his picture of that world grows more accurate.

In the above manner, the techniques of data gathering are used to generate descriptions of components of the problem situation. Having adequately observed and recorded these components, generalizations about the nature of each component are constructed. These generalizations are descriptive as opposed to analytical, and provide no insight into the relationships between components. Proposing relationships is in part a task of the next stage of inquiry.

At this point, the real fruits of the method of participant observation became apparent. Now we can formulate new and original hypotheses, subject to further participant observation or investigation by some other technique.

Summary

Briefly, participant observation is a technique of obtaining basic descriptive data about behavior. The observed behaviors are seen in their social contexts and interpreted to the observer through his own intuition and by other participants. Participant observation is, in short, a prescientific method. Its findings, however, cannot be considered without value. As a technique from which to build more objective methodologies, it may be exceptionally valuable. As a method which adds the environmental dimension on which to base theory, it is obviously useful. As a basic way of gaining insight into health behavior, it is of great potential. With our rapidly increasing recognition of the behavioral dimension of health and disease, participant observation offers numerous alternatives which, when utilized, may increase the quality of the resulting research strategy. And, as a method to evaluate on-going service programs, from within the consumer population, it offers valuable possibilities; it allows programs to be constantly re-evaluated in an on-going manner. It answers the questions of what happened between the pre- and posttests.

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